# MEDICINE SURGERY

INDUSTRIAL HEALTH
OCCUPATIONAL DISEASES
TRAUMATIC, INDUSTRIAL

INDUSTRIAL HYGIENE
INDUSTRIAL MEDICINE
& RAILROAD SURGERY

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THE papers by DR. BURNELL, DR. SAPPINGTON, and DR. SMITH which lead off this issue were presented at a joint meeting of the CHICAGO SOCIETY OF INDUSTRIAL PHYSICIANS AND SURGEONS and the Chicago Gynecological Society in January. With the interesting discussions (omitted here), these papers are appearing concurrently in *Am. J. Obst. & Gynec.* . . . DR. COYER's careful study of seven cases of tetrachloroethane poisoning (page 230) uses the word "tetrachloroethane" as it is spelled in the Definitive Report of the Commission on Nomenclature of Organic Chemistry of the American Chemical Society, adopted by the Council of the International Union of Chemistry. General and commercial usages, however, accept the spelling "tetrachlorethane" employed by CAPTAIN WILSON and MAJOR BRUMLEY (page 233). Another common acceptance of two spellings occurs with "trichloroethylene," often used without the second "o" . . . DR. HAZLETT's "Tuberculosis in Industry" (page 239) not only adds to the growing evidence that tuberculosis and its tragic effects *can* be headed off, but also presents very strikingly the results of the "adequate and early medical care" he so well illustrates. This emphasizes, again and forcefully, the opportunity of the industrial physician to discover the need for medical care soon enough to make it "early," and certainly enough to be sure that it is "adequate." The opportunity thus afforded is one of the distinctions, and its realization is one of the privileges, of industrial medicine. . . . GERMANIUM, by DRS. HARROLD, MEEK and MCCORD (page 236) is another "first," to be added to the long list of "first" with which the names of these careful authors are associated. . . . DR. KREPPS offers his "Use of Oral Antigens" (page 235) with full appreciation that it is only, as it were, a preliminary report, not final, in any sense. His intention is to supplement this experiment with further control tests and to submit a more complete and informative discussion in a later issue. . . .

*—Continued on page 272.*


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## how to fight fatigue and heat-prostration

SUMMER's sultry sun plus the man-made heat of
coke-oven or blast-furnace cause workers to lose vital body-salt
through perspiration, often as much as 300 grains per man in a single day.
This loss causes muscle-cramps, excessive fatigue, heat-prostration, and gastro-intestinal upsets.
Sharp & Dohme's 'Thermotabs' Tablets Sodium Chloride and Dextrose are designed for
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THE object of this Association shall be to foster the study and discussion of the problems peculiar to the practice of industrial medicine and surgery; to develop methods adapted to the conservation of health among workers in the industries; to promote a more general understanding of the purposes and results of the medical care of employees, and to unite into one organization members of the medical profession specializing in industrial medicine and surgery for their mutual advancement in the practice of their profession.

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## PERSONAL

COLONEL EMERY B. NEFF, of Moline, Illinois, has been named Chief of Surgical Service at Mayo General Hospital, of the U. S. Army, at Galesburg, Illinois, going there from Stark General Hospital, at Charleston, South Carolina, where he was surgeon. COLONEL NEFF was in the U. S. Medical Corps, 1916-23, resigning as Major to establish his surgical practice in Moline. Later he was made Lieut.-Colonel, U. S. Med. Reserve Corps. He is well known in industrial medicine, having become identified with American Steel & Wire Co., at De Kalb, Illinois, in 1923, and with Deere & Co., Moline, since 1926, where he was Chief Surgeon until he assumed active duty in the Army in 1942.

DR. F. A. OLSON, of Minneapolis, has taken a leave of absence to become associated with Dr. W. A. Morrison, chief of the medical staff of the Santa Fe Railway, during the war emergency. He will be a member of the surgical staff of the Santa Fe Hospital in Los Angeles, California.

MAJOR JOSEPH L. FETTERMAN, M.C., U.S.A., author of "The Mind of the Injured Man," has an article entitled "A Note on Rehabilitation: Work as Therapy" in *Ohio State Medical Journal*, for February, 1944.

DR. J. L. JONES has resigned as director of the Division of Industrial Hygiene, Utah State Health Department, to become chief of medical services of the Washington State Health Department at Seattle, effective March 1. A native of Sevier county, DR. JONES attended Utah State Agricultural college, University of Colorado, University of Chicago and Harvard university, obtaining both his medical and public health degrees from Harvard. He served for six years as director of the bureau of communicable disease control for the Kentucky Health Department, and returned to Utah in 1934 as assistant state health commissioner and epidemiologist. In 1935 he succeeded DR. T. B. BEATTY as state health commissioner, and,

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with the help received under the Federal social security act, enlarged the Utah health department and established within it the various standardized services it now contains. From 1939 to 1941 he was given leave of absence to develop Utah's first industrial hygiene program and carry out studies in cooperation with the U. S. Public Health Service. He became director of the new Division of Industrial Hygiene in 1941.

DR. E. L. BISHOP, Director of Health, Tennessee Valley Authority, recently requested the U. S. Public Health Service to survey and evaluate the dental program at Chemical Plant II, Wilson Dam, and to make recommendations regarding the expansion and modification of the dental service as proposed by the plant's dental officer, DR. V. B. SMITH. This survey was made early in January by DR. L. D. HEACOCK, Senior Dental Surgeon (R). In ad-

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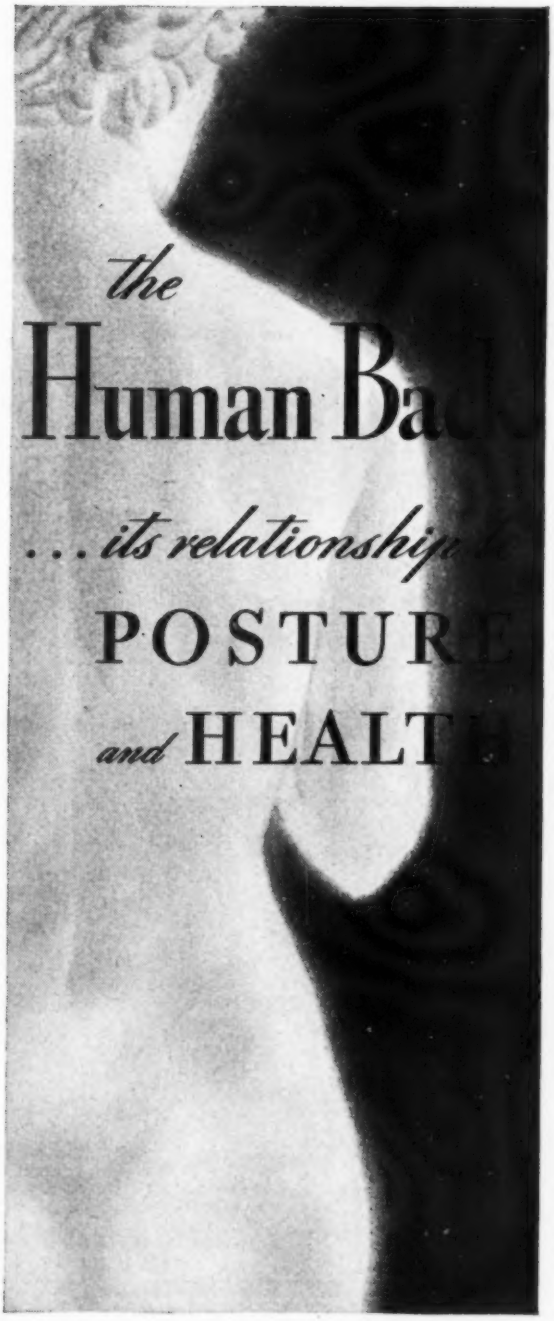


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dition to specific recommendations on the dental personnel, quarters, equipment, and record system for an enlarged program in the particular plant surveyed, the suggestion was made that serious consideration be given to the development of dental facilities in the medical services throughout the four TVA districts.
—*Industrial Hygiene*, January.

ALLEN EDWARD DOOLEY, formerly assistant director, Pennsylvania Department of Health Industrial Hygiene Laboratory, has been promoted from Captain to Major and is stationed at the Army Industrial Hygiene Laboratory at Baltimore.

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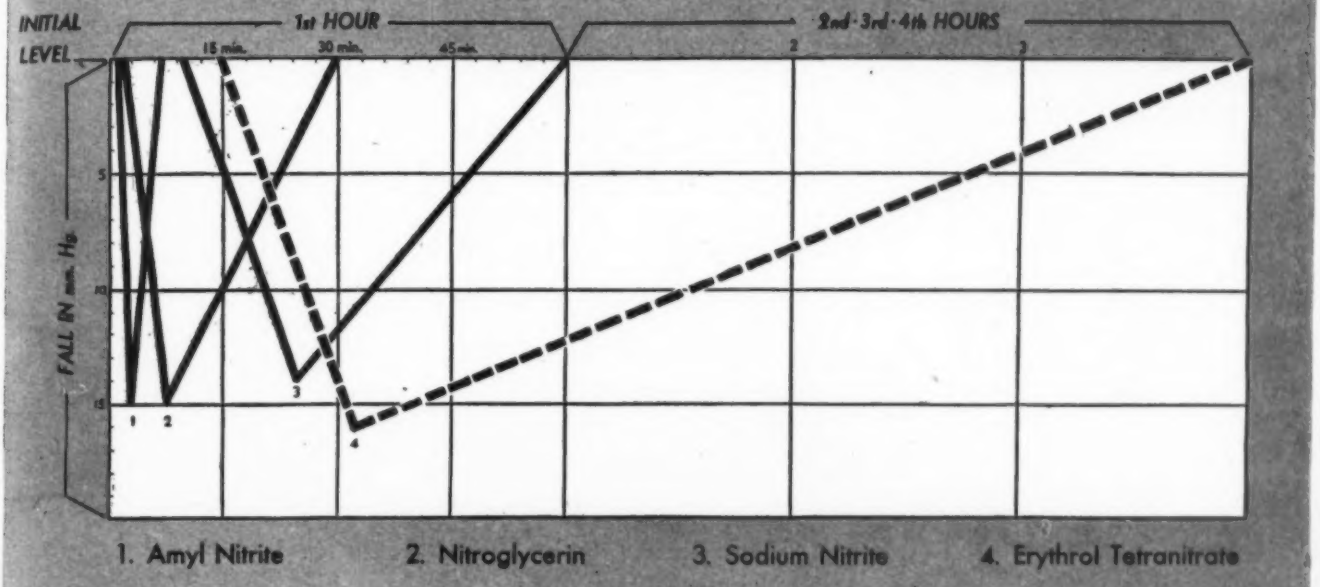


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TWO officials of the U. S. Public Health Service were the lecturers at the initial session of the course on industrial hygiene at the Chamber of Commerce Building February 1. The instructions are sponsored by the Lackawanna County Medical Society. The speakers were DR. WILLIAM M. GAFAFER, senior statistician, and DR. HUGH P. BRINTON, statistician. DR. GAFAFER spoke on absenteeism, its causes and preventive methods in so far as health is involved. DR. BRINTON'S subject dealt with the relationship of diseases to occupational and industrial environment. Ten sessions will be conducted. DR. GAFAFER'S book, "Manual of Industrial Hygiene," has been adopted as the official textbook. DR. J. D. LEWIS heads the society's industrial


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TO provide an organization, not for pecuniary profit, in which all agencies and societies, both medical and lay, concerned with the problems of industrial health can hold membership and can meet together in conference for the study, discussion and careful consideration of all industrial health problems and procedure; to engage in scientific research to determine the cause, nature, prevention and cure of diseases and injuries of occupations; to assist in establishing and supervising industrial health clinics to serve small industries; to establish and maintain hospitals which will furnish facilities for the care, treatment and study of occupational injuries and diseases; to make surveys of industrial medical services and recommendations for their improvement; to solicit, receive and administer funds for any purpose that will advance and/or improve industrial health; to establish undergraduate and/or post-graduate courses in industrial medicine and surgery and/or to cooperate with medical schools and industries in maintaining such courses; and to use all those means which from time to time, may seem wise for the advancement of industrial health.

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## To Reduce Absenteeism Among Women Who Miss 1 to 3 Days Each Month!

**1.** This easy-to-read, 24-page booklet is designed for your workers . . . contains the do's and don'ts women need to know on how to feel better and stay on the job regardless of the calendar. Discusses such subjects as sleeping, drinking, showers, diet, how to lift, how to curb cramps, when to see a doctor, facts for older women. The quantity you need for your plant will be sent post-paid and free, with the compliments of Kotex.

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Just recently a war-plant nurse made the discovery that their *greatest* number of absences are women who missed 1 to 3 days each month, frequently due to their menstrual periods.

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health committee. DR. L. A. MILKMAN is president. The course is being given under direction of LT.-COL. A. P. HITCHENS, department of public health and preventive medicine, University of Pennsylvania School of Medicine. Doctors who complete the course will be certified. The intention is to make the cooperation of medicine with industry of mutual benefit and for the best interests of labor.

—*Scranton, Pa., Tribune,* February 2.

### Illinois Institutes

THE Industrial Health Committee of the Illinois Medical Society (DR. FRED W. SLOBE, Chairman) is sponsoring a series of meetings on industrial health to be held at various centers in Illinois during April. One, on April 6, will be at East St. Louis, day and evening, principally on medical subjects. Another, on April 13, at LaSalle, will be open to industrial executives, nurses, and other interested groups. The object of these meetings is to present information not only to members of the medical and nursing professions but also to representatives of both labor and management, together with the accessory technical specialties, industrial hygiene, safety and sanitary engineers. Such conferences have proved to be an effective method of disseminating industrial health information to those who have the most need for it.

## GENERAL

THE Industrial Hygiene Division of the U. S. Public Health Service now officially recommends that birth control information should be made available to all married women in war industries.

—*Rochester, N. Y., Times-Union,* January 31.

IN OCTOBER, 1941, there were 57 known industrial nurses in Georgia. By July, 1942, the roster had increased to 121, and to date there are some 200 industrial nurses.

—From "Development of Industrial Nursing in Georgia," by MARY G. DEVINE, R.N., in *J.A.M.A. Georgia,* December, 1943.

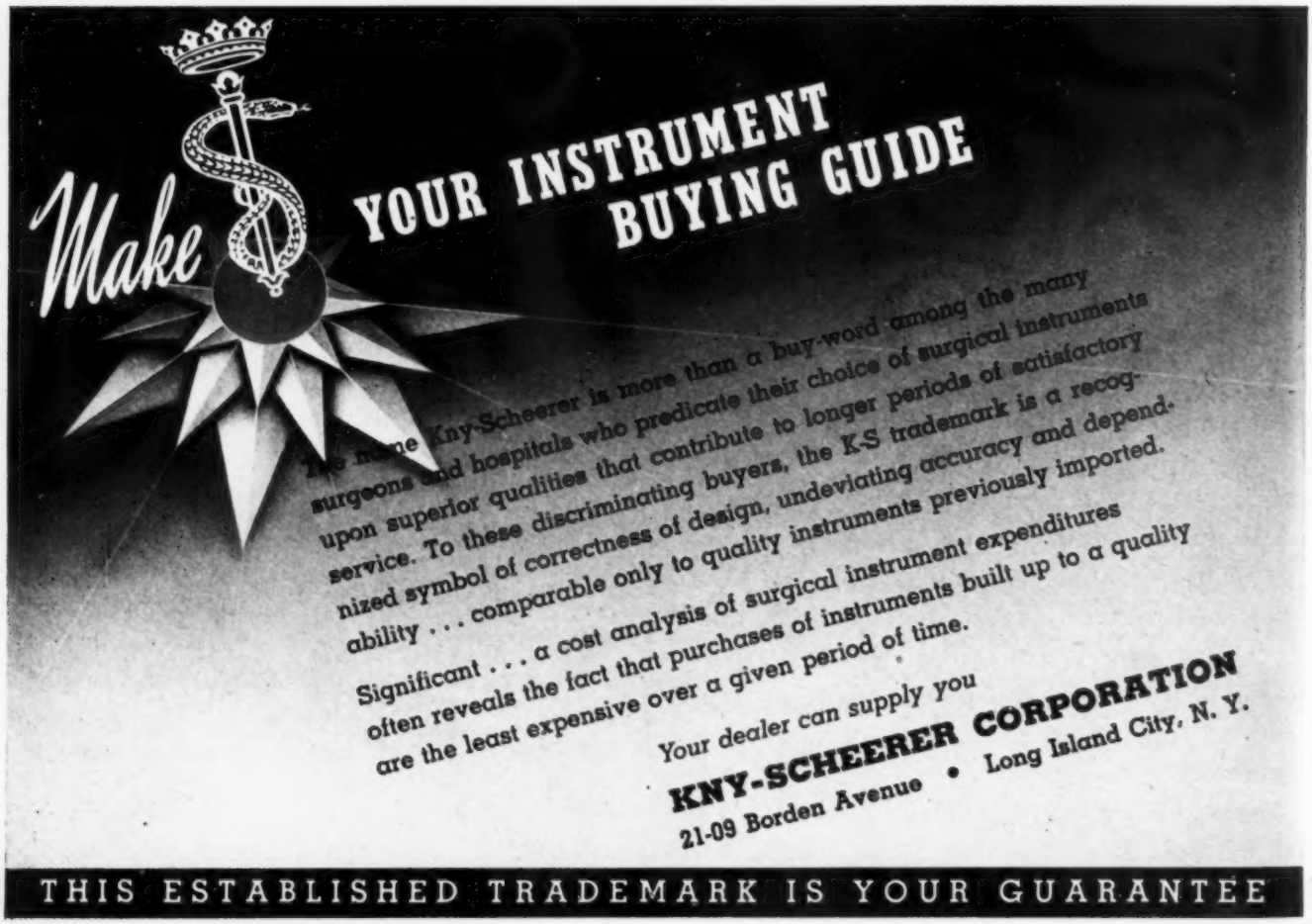
THE Industrial Hygiene Codes Committee of the American Foundrymen's Association recently has prepared and published the "Code of Recommended Practices for Industrial Housekeeping and Sanitation." This timely good practice recommendation is the latest in a series of seven codes prepared by that committee. As is outlined in the section devoted to scope, "this recommended good practice code describes the necessary fundamental engineering and construction information for the layout, design, installation and maintenance of wash, locker, rest, toilet and lunch rooms, and the general industrial housekeeping and sanitation facilities for the protection of health and safety of persons and the promotion of good industrial relations." The material contained in this report should be of immediate interest to every foundry manager.

—From *The Foundry,* Cleveland, Ohio, February.

TWENTY-FIVE per cent of industrial workers have defective but correctible vision *(Nat. Soc. for Prev. of Blindness).* . . . ACCORDING to N. A. M.'S DR. VICTOR HEISER, adequate plant medical programs reduce accident frequency by 45%, absenteeism by 30%, occupational diseases by 63%, labor turnover by 27%, industrial compensation insurance by 29% (*Modern Industry,* 1-15-43). . . . A SYRACUSE New York, factory has established a foot clinic for monthly check-ups of footsore workers (*Forbes,* 12-15-43).

—From Connecticut General's *Notes & Quotes,* February, 1944.

AN EPIDEMIC of severe colds which increased absenteeism to an alarming level has been reduced by more than 80% among the workers at Willys-Overland Motors through the distribution of immunization tablets, according to the manager of the company's hospital. Approximately 375,000 tablets were distributed in packaged form to workers in all company departments during the height of the influenza wave, at a cost of nearly $10,000. Described as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an "oral cold vaccine," the tablets are a biological product which provides active immunization against the bacteria or virus believed responsible for the more severe type of cold.

—Press release.

ACCORDING to press reports, a physician from a western state came into a southern Indiana city last summer, to become a member of the medical staff of a local defense industry. Later he entered into the private practice of medicine in that city, seemingly without having undergone the formality of procuring an Indiana license. The State Attorney General's office thereupon filed a restraining order, and a short time later the attorneys for the physician in question filed an agreement in the local Circuit Court to the effect that the physician in question would cease violating the Indiana statute and close his office. Too many evasions of this law have been taking place in Indiana, each of them no doubt based on the allegation that extra medical help is needed in the defense industries. Physicians who should know better take on "assistants" who are not regularly licensed in the state, some of them wholly unable to meet the requirements of the Medical Practice Act. We have checked some of these cases and find that while some help may be necessary, there are plenty of licensed physicians to fill these places.

—In "Editorial Notes," *J. Indiana State M. A.*, February.

## The Common Cold

DR. G. BERGQUIST, a Swedish physician, has published the results of a study on the common cold in the medical journal, *Svenska Lakartidningen*. The investigation covered 855 male workers between the ages of 20 and 60. The subjects were divided into four similar groups each of whom received one of the following: A: Tablets of indifferent composition; B: Quinine tablets; C: Vitamin C tablets, and D: Quinine admixed with vitamin C. The tablets were labeled by letter and observations were made for a period of three months. There was no statistical difference in the suffering from colds in any of the groups, and the conclusion is reached that quinine and vitamin C have no more effect on the common cold than sugar pills.

—*Industrial Hygiene Digest*, January, 1944, from Swedish International Press Bureau.

## Pneumonia in Shipbuilding

IN THE 12-month period from September, 1942, to September, 1943, 864 patients with pneumonia were treated at the Permanente Foundation Hospital, Oakland, California. Through a health plan, this hospital furnishes complete medical care to 90,000 employees of the four Kaiser shipyards at Richmond, California. The diagnosis of pneumonia was substantiated in every case by a positive roentgenogram of the chest. No questionable cases of "minimal" pneumonia, "pneumonitis," or similar indefinite diagnosis were included in this series. Patients with pneumonia as a contributory diagnosis to another illness were excluded. A study of the epidemiology of pneumonia at the shipyards indicated: (a) The annual frequency rate of pneumonia was 9.5 per 1,000 workers. There were no reliable data to indicate that the incidence of pneumonia is different among shipyard workers from among the general population; (b) Evidence was presented showing that the type of pneumonia which has been seen among shipyard workers was in no way different from that seen among the general population; (c) There was no indication that workers who had recently migrated to this area from other states were more susceptible to pneumonia than those who have lived in this region for a long period of time; (d) Data were presented showing that the incidence rate of pneumonia is independent of the length of employment at the shipyards; and (e) There was no relationship between the incidence of pneumonia and occupation. Statistics presented demonstrate that the incidence rate of pneumonia among the workers is independent of the type of work done. Obviously the morbidity or illness rate from pneumonia is practically the same for all crafts in shipyards. It belies the oft repeated statement that welders were more prone to get respiratory diseases than are men in other shipyard trades. As pneumonia is commonly accepted as an index of both the seriousness and general occurrence of severe respiratory illness, it is important to the steel fabrication industry in general and especially to the shipbuilding industry that these figures be known. This

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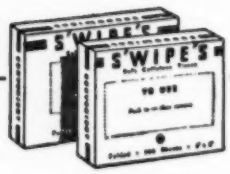


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paper is the work of DR. MORRIS F. COLLEN, GERHARDT L. DYBDAHL, and GEORGE F. O'BRIEN of the Permanente Hospital, Oakland, California. It appeared in full in the January issue of *J. Indust. Hyg. & Tox.* The Division of Shipyard Labor Relations, U. S. Maritime Commission, Washington, D. C., will be glad to send copies to the medical directors of all shipyards and to such others as may request them.

—From *Industrial Hygiene*, January.

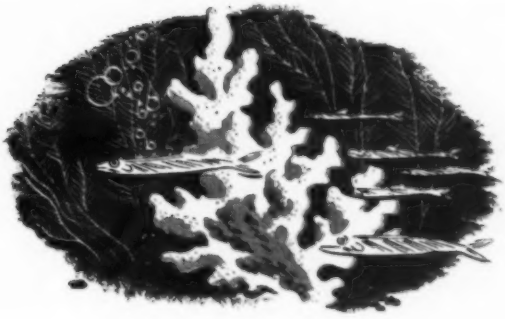
### "Fumes Fell 38 Workers"

SUCH were the headlines in all the Boston, Massachusetts, papers on December 11, 1943, when, according to the newspaper accounts, 38 women employed at a Cambridge plant had fallen unconscious from a mysterious gas. For the moment it appeared that the Cocoanut Grove tragedy had been repeated on a smaller scale. Investigation by members of the staff of the Massachusetts Division of Occupational Hygiene revealed that the "mysterious" gas was carbon monoxide and that, of the 38 workers affected, only eight required hospitalization for a single night. There were no fatalities nor apparent sequelae. Atmospheric contamination with carbon monoxide occurred from the use of two brazing furnaces and a combustion chamber in which illuminating gas was reduced to a mixture of carbon dioxide 8%, carbon monoxide 12%, and nitrogen 80%. A leak was found around the sight glass of the combustion chamber, but the primary cause of the poisonings was the breakdown of a ventilating fan. Although the plant was immediately shut down, the furnaces were run experimentally at night, and within one hour concentrations in excess of 100 p.p.m. were found with a temporary 16-inch fan in operation. Experimentally, 20 minutes after the fan was stopped, concentrations in the workroom reached 280 p.p.m. Steps instituted to prevent a recurrence included more adequate exhaust ventilation, a carbon monoxide alarm, and segregation of the furnaces from the main workroom. The moral of this story would seem to be that a situation involving an extremely "close call" for a sizable group of workers might at any time be duplicated in many plants in Massachusetts and other states, and that operations such as the one in question call for more attention than they have been getting.

—MANFRED BOWDITCH, Director, Massachusetts Division of Occupational Hygiene, in *Industrial Hygiene*, January.

### X-ray Bullet Finder

AN X-RAY device, to meet the Army's need for something to detect bullets and shrapnel in wounded men speedily, was demonstrated at the Army's School of Roentgenology recently by Col. Alfred A. de Lorimier, commandant. The unit, a field hospital x-ray designed by Westinghouse engineers, enables surgeons working close to combat areas to locate foreign bodies precisely in one minute. It localizes slugs and fragments in two planes, vertical and horizontal, and makes it possible to keep the patient in the same position for surgery. "Fatalities from wounds received in combat by Army men have been remarkably reduced since the last war," said Col. de Lorimier whose brain-child the unit is. "During World War I from 16 to 18% of those wounded died, whereas in this war the percentage is only 2.5 to 3.5%. We hope this device will contribute to lowering that percentage even more. When an American soldier, wounded by gunfire or a fragmentation bomb, is brought into a field hospital his life may depend on the rapidity of diagnosis. How many fragments have penetrated his body, where are they, and what is the path the surgeon's knife must follow to remove them? This x-ray unit rapidly and accurately answers all these questions." The stretcher bearing the wounded soldier is placed on the topless Army x-ray field table—so designed that the stretcher becomes the table top—thus eliminating the necessity of moving the man. His entire body is visualized by fluoroscopy in a matter of seconds, i.e., it is examined by viewing a fluorescent screen on which the x-rays cast the image of the body's interior. The shadow of any fragment is thus projected on the screen. A spot immediately above the fragment is marked with iodine, and the depth of the fragment in the flesh is obtained from a scale on the table after three simple adjustments of the x-ray tube and screen. In a small minority of cases the wound is superficial, the fragment is near the surface, and the spot directly above it is obviously the best point



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*Reznikoff, P., and Goebel, W. F.: The Use of Ferrous Gluconate in the Treatment of Hypochromic Anemia. *J. Clin. Invest. 16:547, 1937.*

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**1** Plasma is administered for systemic management of shock, and morphia are given to relieve pain (except when marked anoxia is present).

**2** Both patient and attendants are masked to curb one of the greatest sources of burn infection. Standard aseptic operating room procedure is observed throughout.

Curity Surgical Mask has a special filtering cloth which effectively *traps* breath-borne bacteria. Unique design assures a snug fit at all edges so that no breath escapes filtration. A soft metal rib in the upper hem is shaped to fit over the nose and prevents fogging of spectacles.

**3** Grossly soiled burns are washed and debrided. Large blisters are drained by puncture but small ones are not disturbed.

**4** Burned area is covered with sterile petrolatum or boric acid ointment and a single layer of fine mesh sterile gauze strips is applied. The ointment may be applied to the gauze before use.

Curity Gauze Bandage, U.S.P., fulfills every "must" for this specific use: fine 44 x 36 mesh, correct size . . . widths from 1 inch to 4 inches, sterilized after packaging . . . and as an extra feature—the famed "Welded-edge" which eliminates danger of raveling along edges.

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**5** Over this is placed a layer of sterile absorbent gauze sponges.

Curity Gauze or Lisco Sponges (Pads). The function of this part of the dressing is the absorption of wound fluids. Therefore, CURITY LISCO SPONGES are preferred. Their fine web of Densor Cotton, protected by three layers of gauze, gives LISCO SPONGES superior absorption and safety.

**6** Then the entire extremity or torso is completely wrapped with layers of thick resilient material. This padding is continued to enclose toes or fingers.

Curity Abdominal Pads are ideal for this use. They are made in six convenient shapes and sizes to fit almost any area of the body. They contain absorbent materials as well as a generous layer of cushiony, resilient non-absorbent cotton. Because they can be applied as neat units they are easier and quicker to handle than masses of loose material would be.

**7** An elastic bandage is firmly wrapped around this massive layer to establish and sustain pressure equally on the whole surface of the burned member.

**8** This dressing is not disturbed from 10 to 14 days unless complications arise.

Tensor Elastic Bandage is obviously the bandage of choice. It is made with covered *rubber* warp threads which give Tensor Bandage unmatched elasticity and stretch.

You can *control* Tensor for any degree of pressure. Whatever pressure you select is *maintained* without relaxation by Tensor's *rubber* threads.

This is vitally important in the Compression Treatment for Burns where the completed dressing must remain undisturbed for as long as two weeks without diminution of pressure.

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SOUND research developed these professional dressing materials . . . and sound research has also discovered a new important use for them in combating one of man's most deadly enemies—severe burns.

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of entry. But in the vast majority the fragment is localized in two planes and so, by a simple mechanical process, a point on the skin horizontal to the fragment is marked and the distance from this point to the fragment is measured. After the patient is transferred to surgery his position on the operating table is made to coincide with his former position on the x-ray table by means of a caliper spirit level.

## COMMENT and OPINION

I HAVE found that a patient under the pressure of duty, responsibility, nervousness, worry, a particularly high-strung individual, who is overworked and debilitated, has a pronounced predisposition to the formation of "ids" of the hands. Usually a fungus infection of the hands is accompanied by involvement of the feet. The opposite is not necessarily true.

—From "Epidermatomycosis of the Feet and Hands," by J. J. BARROCK, M.D., in *Urol & Cutan. Rev.*, January.

PREVENTION of disease or injury by medical supervision means that a physician will have the interest and take steps to acquaint himself with the hazards of the materials and processes in the plant. On the basis of this knowledge he will supervise the control of the working environment and carry out the procedures necessary for early detection and elimination of occupational diseases. Concurrently with getting the environmental conditions under the best possible control, the attention to the workers will consist of periodic physical examinations. These examinations will include specific tests to measure body damage from exposure, such as basophilic aggregation and urine analysis for lead and urine sulphate determination for benzol. Proper supervision of workmen cannot be carried out without knowledge of industrial etiology. The uninformed physician has a tendency to overlook the possibility of industrial etiology or has jumped to unfounded conclusions.

—From "Industrial Medical Relationships," by ORLEN J. JOHNSON, M.D., in *Northwest Med.*, December.

THE treatment of sprains by infiltration of the injured ligaments with a local anesthetic is not a new discovery but rather is a rediscovery. The technic of this procedure and the explanation of the favorable action therefrom have been described in detail by the originator of this curative method. The gratifying results have been amply confirmed. Success depends upon two factors: the elimination of pain and tenderness and the normally active use of the sprained joint. It is only by complete removal of pain and tenderness that the necessary active motion can be effected. This in turn permits the resumption of normal activity without loss to the individual, or to the organization in which he works, or to industry.

—From "Local Anesthesia Treatment of Sprains," in *Nebraska State M. J.*, January.

IT OFTEN has been stated, and this by astute politicians, that an organized medical profession could control most elections. This is true, for no other group is so strongly ingratiated into the confidence of the American people; no other group so frequently comes into intimate contact with these folk, usually right in their own homes. It is not necessary for a physician to be a politician in order to carry on this work; as a matter of fact, he is better equipped for this if he has no official connection with either of the parties. We dare say that practically every physician is frequently asked by his patients, "What do you think . . .?"—referring to some political or economic question before the American people. And the same group of questions frequently is propounded to physicians concerning local candidates for office. Even though the question is not directly asked, there are frequent opportunities to discuss local and even national politics with those whom you know so well. If one-half of the members of the medical profession would take time to explain the plight

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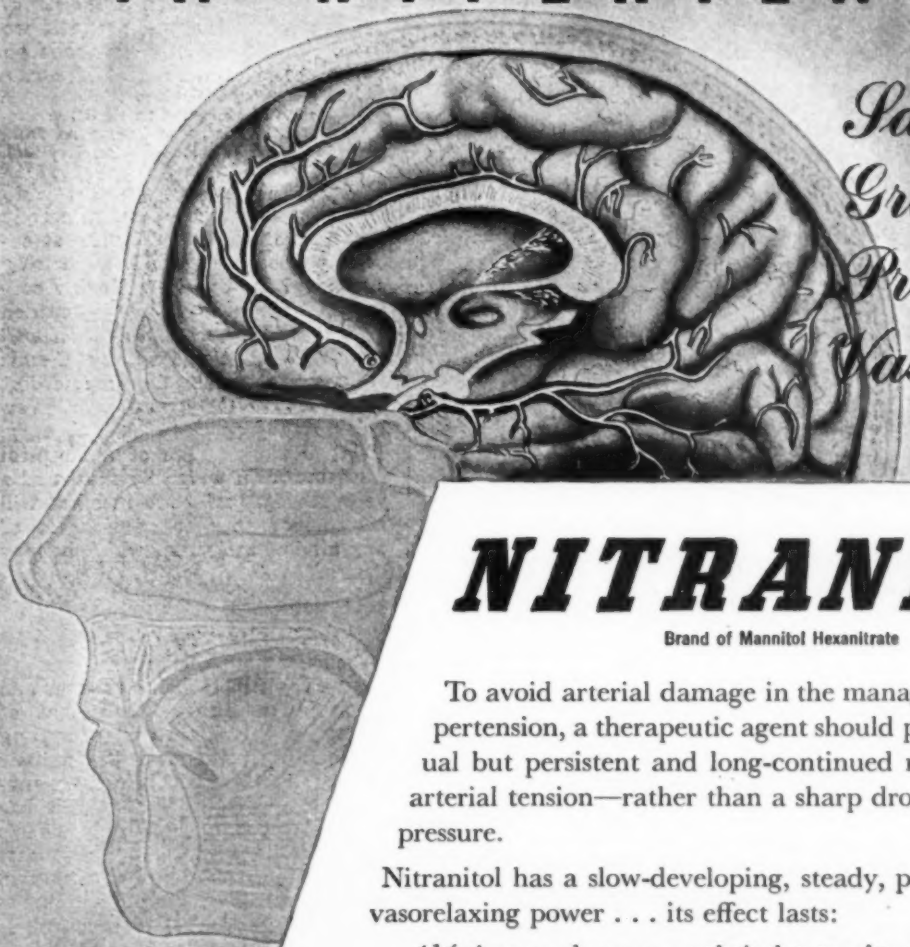

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we presently are in—referring to the attempts to "take over" the practice of medicine—to their own patients, it would be but a matter of days until these folk would express themselves to the representatives in the national Congress in plain language, language that even a politician understands.

—From "The 1944 Election," an editorial in *J. Indiana State M. A.*, February.

IT IS generally said that illness among industrial workers causes an absence of approximately eight or nine days each year per worker. This is a general rough average which is of some value for discussion purposes but this figure requires more careful examination. GAFAFER, of the U. S. Public Health Service, has been, more recently, conducting the absenteeism studies in industry for the U. S. Public Health Service. This work was originally started by Brundage and has now been going on in the U. S. Public Health Service for a period of about 25 years. In one of his recent papers, GAFAFER points out that the sickness experienced by a group of industrial workers during a particular period of time is not uniformly distributed among the group but rather concentrated owing to the fact that there exist certain repeater or sickness-prone workers. He says: "Thus in 1939 among a group of approximately 3,000 male workers, 44.8% had no disabling sicknesses of one day or more recorded for them, 31.5% had one sickness each, 13.0% had two sicknesses, 6.7% had three, 2.5% had four, 0.9% had five, 0.4% had six, 0.1% had seven, and 0.1% had eight." In other words, about 60% of the employees in this particular group were accountable for all of the illness and about 30% had more than one illness each. From these figures, and I believe these are fairly representative although not exactly representative of all industries, it becomes clear that we must determine those groups in the population who are sickness-prone if we are to make any great in-roads on this problem of industrial illness.

—From "Recommendations on How the Health of Workers Can Be Better Protected," by LEONARD GREENBURG, M.D., in *Industrial Bulletin*, December, 1943.

## In 1754

IF IT WERE worthwhile, somebody might call Mr. de Kruif's attention to the little pamphlet recently purchased by the New York Academy of Medicine Library—entitled "*Plan d'une maison d'association*," printed in Paris, 1754, by Claude Humbert Piarron de Chamousset (1717-1773). The translation (*New York Academy Bulletin*, February, 1944) begins: "Plan of a Hospital Association in which by means of a very modest sum each member will be assured in case of sickness of any kind of assistance which he may desire."

## In 1837

IN THE United States the labor of females is used to as great an extent as possible, being cheaper and more under control than that of males; many hundreds of young women are thus separated from their families and brought into the manufacturing villages. So far, this has been attended with no evil effects upon the morals of the girls, cases of seduction being almost unknown, and so sensitive is public opinion on this subject, that if suspicion is attached to the character of any of the females employed in a factory, she must immediately leave it, or the females abandon it in a body.

—Excerpt from "On the Influence of Trades, Professions, and Occupations in the United States, in the Production of Disease," by BENJAMIN W. MCCREADY, M.D., 1837 (p. 64). Reprinted by The Johns Hopkins Press, Baltimore, 1943.

## Communizing Medicine

IT SEEMS to me that we doctors should stop using the term "socialized medicine" as often applied to legislative proposals submitted to the Congress of the United States. The fact is that we doctors socialized the practice of medicine ourselves. We socialized it by adopting and following certain principles, among which are the following: (1) We made it impossible for a doctor to derive financial profit from a scientific discovery of benefits to sick people, and in addition made it obligatory upon a doctor who makes such a discovery to give it to the entire profession in order that it may be universally used by all physicians for the benefit of mankind. (2) We took action to place medical fees for services on the basis of the *ability to pay* rather than a fixed fee basis. This policy

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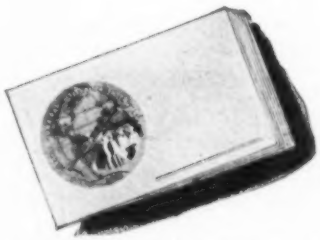

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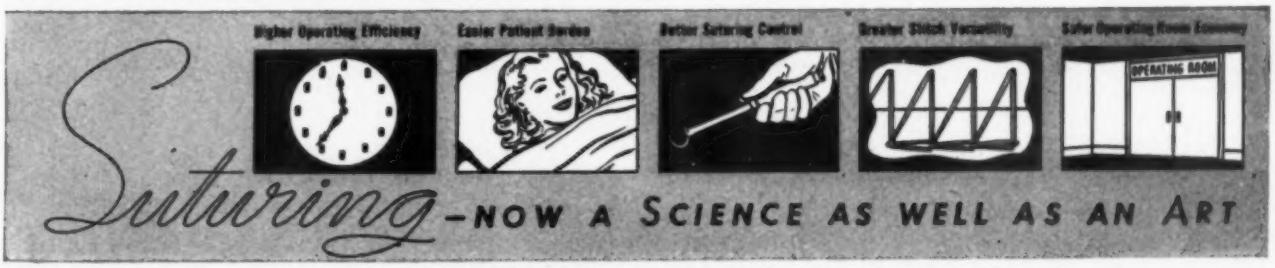
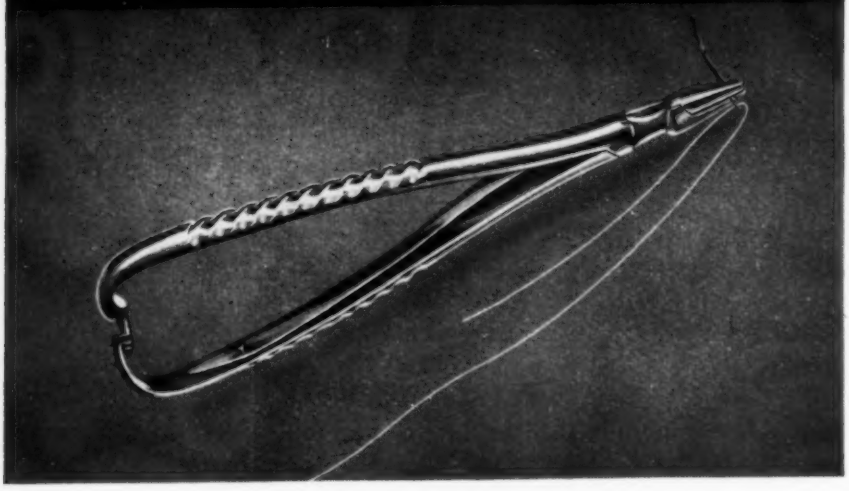


# Emergency Sutures



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has made the services of physicians available to the people of all economic levels without regard to their ability to pay. (3) We took action to place the needs of humanity above and beyond the pecuniary benefits of the members of our profession. By the adoption of these and other measures and by following them we socialized our profession and thus distinguished it from a business. This system, of course, has worked. It has worked because doctors have been imbued with a spirit to make such policies work. The proposals now pending before Congress do not embody the idea of socialized medicine. They embody the idea of communizing medicine, of placing both doctor and patient under the dominating influence of a political bureaucracy. This distinction cannot be drawn too often. It certainly has not been drawn often enough to convince many of our representatives in the Congress of its actuality. So the term, "socialized medicine," as applied to these proposals, should be dropped and a proper and significant term applied to them.

—From "The Socialization of Medicine," an editorial in *J. Tennessee State M. A.*, January.

### Selected Risks

THE Kaiser plan provides for a 50 cents a week or $26 a year payroll deduction on employed individuals—well-paid individuals for the most part. It applies to a selected group to begin with, as few chronic invalids are presumably employed. The overhead in collecting funds is minimal. No expense is involved in soliciting members of the insurance organization. Contributions by the hundred thousand employees should furnish $2,600,000 with which to work. It is stated that 40% of the medical cost is received through State Compensation payments which brings the total sum available to over $3,000,000. This sum is spent for care of employees concentrated in a small area. It provides medical care for the employees only and does not provide for their families. It can be readily seen that the set-up for successful operations of this prepayment organization is particularly favorable. No organization without similar advantages could operate successfully on any such membership fee. Nevertheless deKruif in his flamboyant style claims that Kaiser has made a discovery which will revolutionize the practice of medicine. He foresees that "little Mayo clinics" will be established even in small localities. The difficulties which are encountered in selling healthy individuals any insurance project, the added difficulties encountered when many employers are involved, the reluctance of healthy individuals and the eagerness of sickly ones to join such an organization, all tend to increase costs and endanger the actuarial soundness of voluntary insurance plans. The whole tone of deKruif's book as shown by the excerpts mentioned is irritating. Many of the statements are false either directly or by inference, and he repeatedly makes jibes at the medical profession, its national organization, the fee system, and the conservatism of the profession in general. The most deplorable result of this particular effort of deKruif to open the eyes of the medical profession is that his literary style is rather popular in non-medical circles and his misleading statements have been rather widely spread.

—From "Is Kaiser's Pre-payment Medical Plan Generally Applicable?"—an editorial in *Minnesota Med.*, February.

### In New Zealand

WHAT then is wrong with the present system? In my opinion, the main feature is the administration of the system—the administration entails a vast organization. The departmental point of view is that "it is responsible for the administration of benefits costing a considerable sum annually, and that some safeguard against exploitation must be imposed." (I am quoting from a letter received from the Health Department.) A nice attitude but at the same time quite right if you look at it that the person (in this case the government) who pays calls the tune. Who really pays? The great New Zealand public. And 1,000 practising the medical profession in New Zealand pay also—a not inconsiderable proportion of the sum raised by taxation for social security purposes. The system is top-

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*Antiseptics and Their Action*, R. M. Freeman: *Industrial Medicine*, February, 1940.

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*Etris, S., J. Immun. 46: 309 (May) 1943; Faust, F. B., and Etris, S., J. Immun. 46: 315 (May) 1943; Goodman, M. H., Arch. Derm. & Syph. 47: 640 (May) 1943; Jordan, C. B., Urol. & Cut. Rev. 47: 185 (March) 1943.

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heavy, cumbersome, and entails not only departmental clerical work but a similar position as far as doctors are concerned—too large a proportion as compared to the legitimate function of curing the sick. I can only repeat that a better and simpler method can be evolved by a more sympathetic attitude towards the profession. However, "exploitation" comes into the picture. This is probably quite true. But by seeking more cooperation with the profession such abuses could be stifled. When one turns to reports of what is happening overseas—at home and in other parts of the British Empire—the salient feature is a general agreement that any alteration in the medical services will not take place until *after* the war. Another interesting commentary is that the various Ministries of Health are discussing matters with official bodies of the medical profession, and that means that medical planning for the future is the order of the day. In Australia, after a thorough investigation by a Parliamentary Committee and various official medical bodies, a Medical Planning Committee has been set up by the Federal Council and an organizer appointed. The immediate result is that a unanimity of medical opinion covering the whole of Australia has been obtained. It has also been agreed that any method of service to be evolved shall definitely adhere to the principle of retention of private practice. The idea of group practice is being considered but it is pointed out that it is not easy to establish group practice and that *this must be done gradually.*

—From "Some Aspects of an Improved and Comprehensive Health Service," by COLONEL P. V. GRAVES, N.Z.M.C., in Supplement to the *New Zealand Medical Journal*, December, 1943.

## Women Counselors

MOST of those (private shipyards) visited appeared to be doing a mediocre or poor personnel job with women; but some were found to be doing a most noteworthy job. For example, one with fewer than 200 women operatives had a capable woman personnel officer in charge who was assisted by a secretary-interviewer and a field representative. The women's division handled women's intake and exit interviewing, induction of women, adjustment of complaints and grievances, investigations of new jobs for women, follow-up, transfers, discipline, and other matters pertaining to women's adjustment to the yard. Among other things, the woman executive had developed a good record-keeping system, the function and value of which she understood thoroughly. She had trained her field representative as a competent contact person for the central office, introducing new women workers to their jobs, following them up, making daily contacts with the women's foremen as girls were placed or transferred, reporting daily on the jobs available for women in the yard and shops, handling disciplinary problems, and keeping daily and weekly records of absence, separations and accidents. Though large-scale expansion in women's employment was expected momentarily at time of visit, the well-organized personnel department was equipped to meet the problems that inevitably would arise, thus saving production time and turnover. In another private shipyard employing nearly 1,600 women in the summer of 1943 a similar organization was in force but without such smooth functioning. Its intake and placement procedure was especially satisfactory. The chief weakness was the lack of follow-up of women workers on the job; only problems so pressing as to reach the central office were attended to. The two field representatives working out of the personnel office were given little authority beyond fact finding, and in any case were too few to shoulder counseling responsibility for so large an employment load. It is to be expected that examples of the weaker or more imperfect approaches to the personnel function with women are the more easily found. The shipyards are still feeling their way. Women have been part of the picture less than a year in most cases, and consequently perfection can hardly be expected. It is more economical, however, to learn from others' experience than to muddle through. It is for this reason that a few examples of poorly organized personnel work with women are presented here. In one yard the woman personnel counselor in the main office was too young and ineffective for the post, and the matrons employed in each department of the yard where girls were working had as their sole responsibility checking to see that the workers did not congregate to chat or smoke in the rest rooms. This was a fruitless and negative way of dealing with

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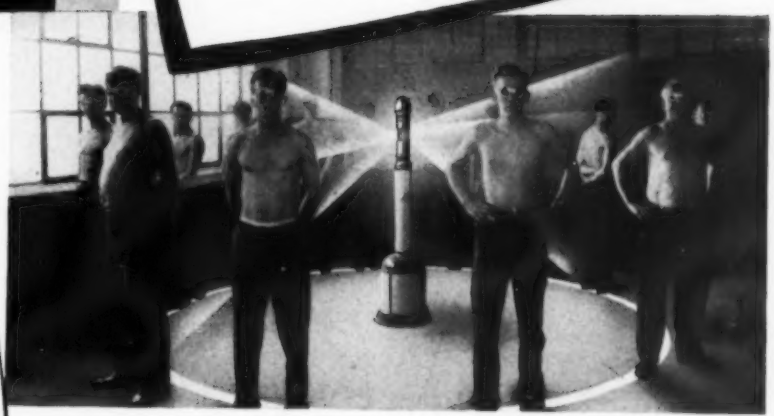

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the nearly 550 women employees. Policing has been found less effective than counseling as a method of teaching employees good work habits. It was promising, however, that the chief personnel officer, a man, was considering at time of visit hiring as his assistant a capable and efficient woman to take over the women's program. Perhaps the most frequently encountered cause of failure in the women's personnel program is the fact that too little cooperation and responsibility for shaping or carrying out major programs affecting the women workers are given women personnel counselors. A Women's Bureau field representative reported of a woman personnel executive and the woman interviewer under her in a large east coast yard that "their.... authority is not very strong, and they are following rather than helping to form policies or procedures . . . it is probably no accident that the person selected as 'dean' appears to be lacking confidence and experience." The situation in a west coast shipyard is described as follows: "There is no clear-cut line of duties and authority. Miss X, who is supposed to be in charge of the entire women's employment program in all the.... yards, is more of a public relations person than coordinator of women's counselor functions. Her activities are concentrated more on outside contacts, and she has little knowledge of the problems of the women in the yards. Hence, there is no central direction as to what the women counselors in the shops can and cannot do. The women counselors who are most effective are those who have somewhat 'bluffed' their way through, and made foremen and yard people think they had authority when actually they had not. However, most of the activities of the counselors center around office work, and they have little contact with women out in the yards. The women safety inspectors, on the other hand, are out in the yard constantly. And it has developed that they are counselors as well as safety inspectors because of their day-to-day contacts with the women on the job. Consequently, a friction has arisen between the two groups." The chief women's counselor in another yard had to struggle with her immediate superior in charge of employee relations about every action she wished to take in the women's program. In still another case, a woman with good background and a variety of experience reported that the shop and department supervisors refuse assistance from the main personnel office. Consequently, new policies affecting women workers had to be submitted to them with the utmost tact and in trepidation for the outcome. The woman personnel officer could accomplish little except by indirect approach, even with the main personnel office. She had to grope her way and consequently felt most insecure in her poorly defined position. Yet she was well equipped to do an intelligent and worth-while job in women's personnel relations in this large yard employing nearly 1,500 women productive workers.

—From "The Woman Counselor in War Industries," by DOROTHY K. NEWMAN, U. S. Department of Labor, Women's Bureau, December, 1943.

### "The Plumbari"

LEAD POISONING has been the traditional occupational disease of plumbers. Modern conditions of work have lessened, but have not entirely eliminated this hazard. Lead pipe which must be filed and cut, and lead solder are still used. Lead wool, and red or white lead are also used for various purposes. In New York State in 1937 there were 42 compensation awards for lead poisoning and 40 claims denied. One of the 40 was a plumber. In 1938 there were 40 awards and 28 denials Again one plumber was among the claimants who for some reason did not establish a case. In 1939 awards were made to plumbers for dermatitis (1), bursitis (1), hernia (1), compressed air illness (1), and creosote poisoning (1). There were no lead poisonings. In 1940 there were awards for compressed air illness (1), bursitis (2), and one case of lead poisoning. This is a very good record but does not mean that there

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is no possible danger from lead poisoning. The plumber does not work under factory conditions. Like the house painter he is often far from the shop, and on small jobs, alone. Under these circumstances the industrial health and safety programs as carried on in factories do not reach him. Some very simple precautions, however, can be taken when handling lead in any process. (1) Take a daily bath or shower after work. (2) Wash hands thoroughly before eating. (3) Do not eat, drink, smoke or chew while handling lead in any form. (4) Eat a well balanced diet containing an adequate supply of vitamins and minerals. This should include plenty of milk. (5) Avoid constipation. (6) Have overalls or other working clothes, washed at least weekly. (7) If you have headache, dizziness, loss of appetite, indigestion, colic, loss of weight, joint or muscle pains, or any other symptom of illness, consult your physician and tell him of your work. The illness may or may not be due to your work; but whatever it is, get proper treatment promptly. A healthy person who keeps himself fit is less likely to contract lead poisoning or any other occupational disease.

—From "Health Hazards and War Accidents in the Plumbing Trades," by M. McMAHON, in the Industrial Commission of New York's *Industrial Bulletin*, July, 1943; reprinted in *Ladle*, December, 1943.

## Vitamins in Industry

IN A CERTAIN large plant, workers were exposed to strong glaring light for considerable periods. It is known that vitamin A plays an important part in the physiology of vision. Investigators in the plant in question believed they obtained evidence that a liberal supply of vitamin A to these workers was of value in combatting effects of glare. It is known that workers in steel mills who must perform hard labor in a very hot and humid environment, and who therefore sweat a great deal, frequently develop muscle cramps and certain other symptoms found to be related to too great loss of water and salt from the body via the sweat. The simple administration of tablets of table salt has been proved to be valuable in preventing the development of such symptoms; and provision of such tablets has now become a standard part of industrial hygiene practice in such situations. More recently it has been learned that workmen exposed to certain toxic chemicals like naphthylamine can be protected in considerable measure by taking relatively large doses of vitamin C, the anti-scurvy factor which we ordinarily obtain from orange or tomato juice, or the uncooked leaf of our salad dish. The dog has the power of manufacturing vitamin C in its body, and therefore scurvy cannot be found in this species by simple feeding of a diet lacking in this vitamin. If, however, a dog is given naphthylamine, symptoms suggestive of scurvy can be produced, and these symptoms can be largely prevented by feeding the animal large amounts of vitamin C. Presumably the body uses this vitamin in detoxifying naphthylamine, and under such conditions the amount needed is much greater than the body can manufacture, with the result that a dietary deficiency develops. This may not be a completely satisfactory description of the situation prevailing in the animal experiments with naphthylamine, but it should suffice to illustrate the point, that there may be special situations in industry for which large amounts of one or more vitamins may be very important.

—From "The Use of Vitamins in Industry," by GEORGE R. COWGILL, PH.D., in *Connecticut Industry*, January.

## Vitamin Advertising

I AM OF the opinion that the manufacturers and distributors of vitamins must make a thorough check of their entire distribution operation. There is constant agitation, through newspapers and other media, against the representations made concerning the value of vitamins. There can be no argument against the fact that vitamins are an extremely necessary part of our daily maintenance diet, and that the lack of vitamins can result in certain types of discomforts; but very often the statements made in newspaper and magazine advertising, and over the air, concerning the results that may follow the use of vitamins, and vitamin deficiencies, are misleading. We do not in this country find, to any great extent, the serious conditions resulting from a deficiency in vitamin B-Complex, for example, that are found in the Orient. It seems to me that vitamin products will continue to enjoy a

# *Designed to* ASSIST *the* PATIENT

THE "RAMSES"* Diaphragm Introducer, designed after consultation with gynecologists, engages the rim of the "RAMSES" Flexible Cushioned Diaphragm at two points, shaping it into an elongated oval, thus enabling it to pass readily into the vagina. By providing complete control over the direction of travel, the "RAMSES" Diaphragm Introducer assures proper and accurate placement of the diaphragm.

**1.** The wide, blunt tip of the "RAMSES" Diaphragm Introducer is designed to prevent even the remote chance of accidental penetration of the uterus during insertion of the diaphragm.

**2.** Made of easily cleansed plastic, the "RAMSES" Diaphragm Introducer has no minute crevices to harbour bacterial growth—no sharp projections to cause possible vaginal injury.

**3.** The broad, rounded hooked end of the "RAMSES" Diaphragm Introducer—used for diaphragm removal—guards against possible entry into the urethra.

***Your patients obtain the "RAMSES" Diaphragm Introducer when you specify the "RAMSES" Physician's Prescription Packet No. 501, which also contains:*** **A "RAMSES" Flexible Cushioned Diaphragm of the prescribed size. A large size tube of "RAMSES" Vaginal Jelly.**

ACCEPTED AMERICAN MEDICAL ASSN. Council on Pharmacy and Chemistry

**The word "RAMSES" is the registered trademark of Julius Schmid, Inc.*

Ramses
TRADE MARK REG. U.S. PAT. OFF.

DIAPHRAGM INTRODUCER

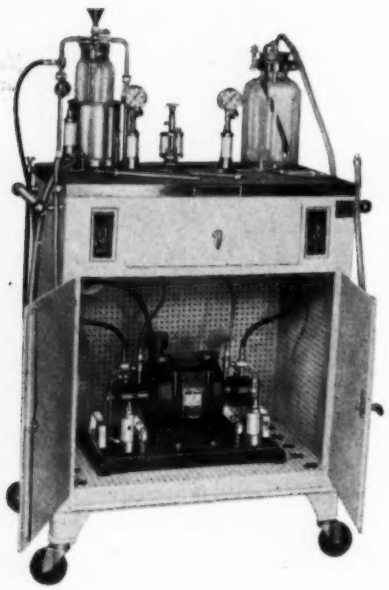
Gynecological Division
**JULIUS SCHMID, INC.**
*Established* 1883
423 West 55 St.
New York 19, N. Y.

The Bellevue Suction and Anaesthesia Apparatus was designed for continuous operation under the conditions imposed by heavy duty hospital work.

Motor unit is mounted on steel cradle suspended on four coil springs which absorb all vibration and eliminate noise. One central automatic lubrication system. A single pressure of a plunger located on top of cabinet assures lubrication during five hours of operation.

Unit is equipped with one gallon size suction bottle. Pressure and vacuum gauges and regulating valves are on top of cabinet, easy of access.

All features of the Bellevue Model are highly perfected, and the unit is *fire* and *explosion proof*.



**Send for Descriptive Circular**

***Sold Only Through Surgical Supply Distributors***

J. SKLAR MANUFACTURING COMPANY
38-04 WOODSIDE AVE LONG ISLAND CITY N. Y.

good market, but not to the extent they do today. Their future market is going to be primarily in the preventive medicine field. Therefore it would be advisable for all manufacturers to get the advertising for those products into the preventive field, and make claims that are not capable of misleading the average layman as to the value of the particular vitamin. These same comments apply equally to mineral-containing preparations. Recently the United Kingdom has modified certain of its regulations governing labeling and advertising of foods, and has prohibited publication of any advertisement which may mislead as to the nutritional or dietary value of a food; and of greater importance is the following material taken from the release issued by the Bureau of Foreign and Domestic Commerce on these United Kingdom regulations: 'The necessity for restricting claims or suggestions in advertisements regarding the presence of vitamins and minerals in a food is in part the direct consequence of the government's nutritional policy. It is essential for the health of the nation that the value of protective foods should be emphasized. This policy must not be exploited in relation to foodstuffs where the protective element is absent or present in ineffective quantity. In the case of products recommended as medicines, in which the presence of vitamins or minerals is claimed, it is already necessary that the label should bear a quantitative disclosure of these active ingredients. After consultation with the Medical Research Council the government has decided that a similar quantitative disclosure of the vitamin or mineral content should also be required in the case of foods in which the presence of these constituents is claimed.' You will note that this prohibits the manufacture from advertising and selling vitamin preparations, for example, based upon statements that the British wartime diet may be short in vitamins. This type of advertising is being used to a great extent in the United States at this time."

—Press release, quoting DR. F. J. CULLEN, executive vice-president, Proprietary Association of America.

### "If You Turned Us Loose"

SENATOR CONNALLY: MR. WILSON, I want to say I think the automobile industry, of which yours is the biggest company, I suppose, performed a marvelous transformation from peace to war and rendered a great national service. May I ask you this one question? Suppose the war would stop next week, how long would it take you to begin turning out automobiles? How long would it take you to turn out your first car? That is, a guess, of course.

MR. WILSON: That is a simple question. I wish I could give you a simple answer, but I can't. In the first place, I don't know what the rules and regulations are going to be under which we will have to operate.

SENATOR CONNALLY: When the war is over we will relax most of these regulations.

MR. WILSON: If you will set down the conditions that will occur, then I can give you a pretty fair answer.

SENATOR CONNALLY: Suppose we take the bridle off.

MR. WILSON: We can do anything we please and move the government machinery out in the snow, as we did our own, and not get in any trouble about it, and all that kind of thing?

THE CHAIRMAN: Without waste of time.

MR. WILSON: And not have to waste time while a bunch of auditors paw over 500 millions dollars' worth of inventories?

SENATOR CONNALLY: For the purpose of this examination we will make some hypothetical cases. Yes, turn you loose.

MR. WILSON: Well, if you turned us loose, we could be producing some cars in three months, and a pretty fair production in six months.

—From "Looking Ahead," the Testimony of C. E. WILSON, president of General Motors, before Special Committee of U. S. Senate to Investigate the National Defense Program (Truman Committee), November 24, 1943.

### Social Trends Not Inevitable

WE HEAR much about inevitable social trends. The argument of these planning barnacles upon the magnificent ship of American Medicine include the ultimate absorption of medical practices into the social

# Midmorning Fatigue

In industrial practice, because of his close contact with the workers, the physician has a first-hand opportunity to realize the disadvantages of the inadequate breakfast; to demonstrate the validity of the recommendation so widely advanced by nutritionists and medical authorities that breakfast should represent ¼ to ⅓ of the day's total food intake.

The incidence of midmorning fatigue, lessened acuity, lessened "application" to the work in hand, and a less cheerful attitude toward it, is considerably greater where the breakfast has been inadequate.

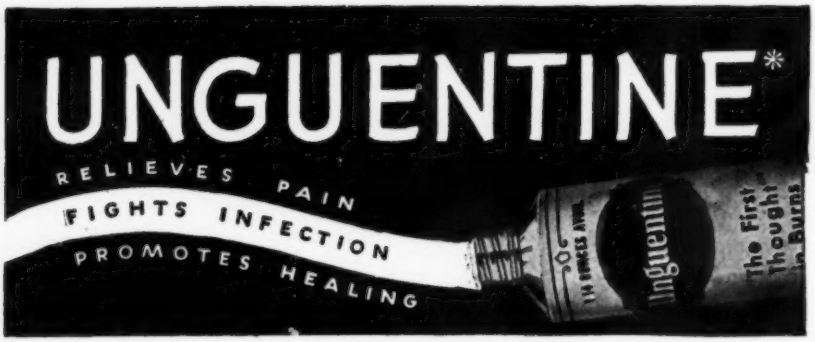
In the basic or minimum (600 calorie) breakfast suggested by nutritionists—fruit, cereal, milk, bread, and butter—a pattern is offered which is easily brought to caloric adequacy by the addition of eggs, breakfast meats, etc.

The contribution made by the dish of cereal suggested is evidenced by the appended table. When 1 oz. of cereal (whole-grain, or enriched, or restored to whole-grain values of thiamine, niacin, and iron) is eaten with 4 oz. of whole milk and 1 teaspoonful of sugar, this palatable dish contributes protein of high biologic value, readily utilized carbohydrate, well-emulsified fat, B-vitamins and minerals.

| | | |
|---|---|---|
| **Calories** | **205** | |
| **Protein** | **7.0** | **Gm.** |
| **Carbohydrate** | **33.0** | **Gm.** |
| **Fat** | **5.0** | **Gm.** |
| **Thiamine** | **0.18** | **mg.** |
| **Riboflavin** | **0.30** | **mg.** |
| **Niacin** | **0.84** | **mg.** |
| **Calcium** | **0.16** | **Gm.** |
| **Iron** | **1.29** | **mg.** |

*The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.*

CEREAL INSTITUTE, INC.
135 SOUTH LA SALLE STREET · CHICAGO 3




**MEDICALLY SOUND THERAPY**
**for**
**MINOR BURNS AND ABRASIONS**

1. ***Unguentine is analgesic.*** For prompt relief of pain.

2. ***Unguentine is antiseptic.*** It fights infection with sustained contact and action.

3. ***Unguentine promotes healing.*** It aids regeneration, usually without scar formation.

UNGUENTINE is a useful surgical dressing. Its continuous antiseptic action is non-irritating and non-toxic; its contact with affected parts is prolonged—and it prevents the bandage from adhering to the wound.

**FOR FREE SAMPLE** of UNGUENTINE for professional and personal use, write—THE NORWICH PHARMACAL COMPANY, Norwich, New York.

Norwich*

*Reg. U. S. Pat. Off.

security program through governmental compulsory health taxation. The amount of money of geometrical proportions necessary for such social medicine is considered the simplest arithmetic by social planners. It is inconceivable that there is a sane majority willing to agree to such profligate spending upon the advice of these planners. Social trends are bound to change. There is nothing inevitable about them in the least. The social trends and the political policies that are now in their ascendency or decline have been exercised in other well known historical times. The New Deal in Ancient Rome was described by Henry Haskell, with all of its alphabetical connotations. The decline and fall of the Roman Empire proceeded. The bureaucrats of Louis XIV and XV ploughed under grapevines and established national vineyards and wineries, only to bring on the French Revolution. History proves that no social trend has been continuous or has never been deflected. There is one thing in nature that I once thought was not to be deflected, reflected or diffracted. That held good for only 25 years until the physicist Bragg discovered that the x-ray beam could be refracted by quartz crystals. And now the photography of the image on a fluoroscopic screen assures us an indirect reflection. Even the apparent assurances of natural phenomena are altered by our increasing knowledge. Nature and social processes are never static. Do not be fooled by arguments of inevitable social trends. They are bound to change and it is men who change them. Men with courage and stamina can lick any social planner.

—From "Navigating the Medical Future with Confidence," by EDWARD HOLMAN SKINNER, M.D., in *Nebraska State M. J.*, February.

## Emotional Problems

DR. ALLAN J. FLEMING, Assistant Director, Haskell Laboratory of Industrial Toxicology, read a most interesting paper on "The Hypothalamus and Human Emotions" at the Eighth Annual Conference, du Pont Medical Division, Wilmington, Delaware, November 10, 1943. This paper appears in full in *Delaware State Medical Journal*, for January, 1944. After a description of the development of the central nervous system and the simple reflexes, DR. FLEMING continues: "It is quite clear from the foregoing that any disease or emotional disorder which will stimulate the hypothalamic area in an abnormal way will give rise to exactly the same sympathetic overactivity and parasympathetic underactivity that accompanies the primitive emotion of fear or anger. On this basis, it is not hard to understand why our present day mode of living is producing so many so-called functional disorders, for we all suffer to a greater or lesser extent from anxiety states concerning our past, our present, or our future. In certain people these normal fears and apprehensions become chronic and dominate the life of the individual so that he goes through life perpetually afraid he will not make the grade. In college he worries himself sick for fear he will flunk. In business he takes his business home at night, eats with it, sleeps with it, and wakes up with it stamped on his features. If a chemist, he worries over his prospects, his inability to predict or control certain reactions; whether he will get a bonus this year, next year, or ever; whether his group leader will steal his ideas and patent them, or whether his group leader will ever think one of his ideas worth patenting. If he is a physician, he may lie awake at night wondering if this or that diagnosis is correct and whether he might not have done better by a certain patient. Stenographers and secretaries to executives frequently develop anxiety states. Years of catering to the personal fads, fancies, and idiosyncrasies of an executive, who may himself be poorly balanced emotionally, may be sufficient to send susceptible women off the deep end. Individuals so affected not only experience a state of anxiety mentally; they also experience it in the functional activity of their internal organs and live virtually in what we would call a continuous state of physiological fear. No wonder they have indigestion, constipation, nervousness, headaches, heartaches, bellyaches, and if the emotional tension persists long enough they may develop gastric ulcers, high blood pressure, or other organic diseases. Why these pathological fears affect one individual's digestive system, another's blood pressure, a third's sex life, a fourth's psychological balance is, no doubt, linked up in developmental

Simple to prescribe

# A COMPLETE UNIT FOR APPROVED CONTRACEPTIVE TECHNIQUE

**provides for patient comparison of Jelly and Cream (no extra cost)**

The Koromex Set Complete contains in a handsome case:

- **1** H-R Diaphragm with special pouch
- **1** Koromex Trip Release (takes all size diaphragms)
- **1** Tube Koromex Jelly (higher lubricating factor)
- **1** Tube Emulsion Cream (lower lubricating factor)
- **1** Set Dickinson-Freret Fitting Charts

Price of Koromex Set Complete is only that of the Koromex Diaphragm and Koromex Trip Release Introducer. Attractively packaged with removable label. To prescribe, just write "Koromex Set Complete" and state size of diaphragm.

**Holland-Rantos** *Company, Inc.*

Write for literature

551 Fifth Avenue, New York 17, N. Y.

Invisible Covering

WHERE gloves cannot be worn and greasy ointments would interfere with the work being done—ENZO-CAL* provides the invisible protection so urgently needed these days.

In addition to its protective action, ENZO-CAL supplies prompt and effective antipruritic and healing qualities because of its contained calamine and zinc oxide in exceptionally fine, semi-colloidal subdivision with benzocaine.

Supplied in 1 oz., 2 oz. and 1 lb. jars.
Sample and literature on request.

ENZO-CAL

THE PROTECTIVE, SOOTHING, HEALING, ASTRINGENT CREAM

*Trade-mark Reg. U. S. Pat. Off.

CROOKES LABORATORIES, INC., 305 EAST 45th ST., NEW YORK 17, N. Y.

history of the individual as well as by the particular part of the involuntary nervous system most activated by the complex. Certain people who have great difficulty in releasing their aggression (fight complex) through the usual routes find that their emotional energy is expressing itself in some system of the body, such as the cardiovascular system. This inward expression is carried out through the sympathetic system causing vasoconstriction and resulting in increased tension; hence, the common expression when someone loses his temper: 'Watch your blood pressure!' When hypertensive patients are studied from a psychological standpoint it is found that there is often a great deal of conflict in their make-up and an inability to express their aggression (fight complex) directly. If these people could only 'haul off and knock the block off' of the object of their rage, either physically or verbally, they would avoid the necessity of taking it out on their circulatory system. Instead, they politely 'tell the boss to go to hell' under their breath. If married to a nagging, complaining husband or wife, they sit across the breakfast table outwardly silent and polite, but inwardly boiling with a repressed desire to heave the grapefruit across the table. Incompatible marriages are very often associated with inhibited aggression complexes. A worker who is incompatible with his job usually suffers from an inhibited aggression complex. . . . . Such are examples of abnormal reactions produced by the fight complex from which we derive our aggression, rage, hate, resentment, jealousy, and other like emotions. These types of reactions are most apt to occur in people with what Draper calls the gall-bladder type of constitution, whereas, the flight mechanism from which we derive our fear, caution, apprehension, anxiety are more apt to occur in the asthenic gastric ulcer type. Fear activating the hypothalamus, which in turn gives rise to overactivity of the sympathetic system may, among other things, produce spasms of one or more of the various body sphincters. The feeling of a lump in the throat or inability to swallow are two examples due to pharyngospasm. Pyloric spasm will be followed by delayed emptying of the stomach. Spasm of the anal sphincters favors the production of constipation. Spasm of the muscles about the vulva gives rise to vaginismus and dyspareunia. These are all just manifestations of fear, either acute fear arising from some overwhelming event or chronic fear as it occurs in the anxiety neurosis. The sex problem enters into the life of every individual, and the struggle to sublimate sex instincts and make them conform to social custom has a marked effect on our mental stability. Restraint of these instincts gives rise to fear in a peculiar way: fear that sexual relationships contrary to social custom may expose the offender to his own and public criticism, or fear that venereal disease may result from such relationships. In women the fear of pregnancy, with or without benefit of clergy, always exists. The bulk of man's emotional difficulties with sex usually comes before marriage and the bulk of woman's usually comes after. These fears and their emotional tension act through the hypothalamus to produce an upset in physiological balance the same way as any other fear. . . . Our greatest defect is that we have in the hypothalamus a very elaborate control mechanism for our defense, most of which we do not need in civilized life and which interferes decidedly with our ability to reason by impressing its feeling tone on our higher centers. If you do not believe this, just try to enjoy a movie or a concert with a full bladder. Just try to solve a difficult problem after eating a full meal. Many individuals can stand concentrated study for only a limited period of time before their muscles become so tense they are driven to blow off steam one way or another. It is this inability to relax during prolonged mental activity that fre-

- **THE FORMULA**—Each tablet contains 9 vitamins plus 5 minerals. The daily dose (3 Vitaminets) provides a protective dietary supplement that affords the patient not only a generous vitamin intake but a daily consumption of 5 important minerals as well.
- **PALATABILITY**—Vitaminets 'Roche' may either be chewed or swallowed whole, depending on the patient's preference. The licorice flavor is particularly acceptable to children (and adults, too) who cannot swallow tablets.
- **ETHICAL**—Vitaminets are never advertised to the laity either by drugstore display or other promotional methods.

**HOFFMANN-LA ROCHE, INC. • ROCHE PARK • NUTLEY 10, N. J.**

# VITAMINETS 'ROCHE'

CONTAINING 9 VITAMINS PLUS 5 MINERALS

Available in bottles of 30 and 100 tablets.

# PEDICULOSIS

must be relieved *Quickly* among

# WAR WORKERS

Early discovery, and immediate and effective control, are important in the treatment of Pediculosis among war production workers. Unless proper steps are taken, a single case of Pediculosis may lead to infestation of other employees.

Cuprex is a valuable aid to the industrial physician who bears the responsibility of having to discover and check any condition which may impair the efficiency of the workers under his care.

Cuprex therapy is simple. One treatment—of from 15 to 30 minutes—destroys the nits as well as the lice. Cuprex requires no messy or repeated applications, and the patient may return to his job without delay, and without embarrassment.

*Literature on request*

MERCK & CO., Inc. *Manufacturing Chemists* RAHWAY, N.J.

CUPREX

*The Personal Insecticide*

*Available in 2 oz. and 4 oz. bottles*


quently gives rise to astonishing sexual binges in otherwise quite respectable college students. I venture to say that we will evolve some block mechanism whereby a large part of the tone feeling originating in the hypothalamus will be prevented from interfering with our thought processes. The reverse will also be true and many of the distressing, annoying, pestiferous, petty, of-no-account-fears, rages, jealousies or other disturbing impressions associated with our social, moral, and business life will no longer bombard our hypothalamus in such a way as to keep our insides in a constant state of turmoil. There is evidence that evolution is already at work on just such a change. Even the most pessimistic neuropsychiatrists and others interested in this field estimate that not more than 50% of the population is made up of constitutionally inadequates, neurasthenics, psychesthenics, schizophrenics, maniac depressives, or just plain ordinary everyday screwballs. In America we are constitutionally endowed with the right to life, liberty, and the pursuit of happiness. Constitutionally then our patients ought to be happy. Perhaps you do not believe that chronic unhappiness is a symptom, or perhaps you believe it is such a common symptom that it is too indefinite to evaluate. I do not agree. It is my belief that chronic unhappiness only arises when one or more of the three primitive bioligical requirements or their human modifications are not being fulfilled. Everyone ought to enjoy eating. Everyone ought to enjoy work either through pleasure in the work itself or through the things that work can bring. If not either, the job is unsuitable or the things it brings are inadequate. Everyone should be able to find pleasure in the complexes that are built around our sexual instincts. There is no use hoping to circumvent or sidetrack these instincts. They are built so firmly into our brain that nothing short of a complete section through the medulla will remove them and even then I have my doubts. Don't misunderstand me, I am not suggesting immorality as a solution for this phase of human discontent. That has and will continue to be an individual problem, but I do think that any civilization such as ours that continues to ignore this cause of emotional tension has a lot to learn. We fail to achieve happiness in this life because we fail to drag our mental conflicts and fears, imaginary or real, out into the open. We would be much happier if we recognized the hates, jealousies, and discords in our daily life and in recognizing them beat them over the head with a mental club until the battleground of the cerebrum is covered with dead and dying incompatibilities. We can never achieve happiness if we feel on awakening that life is a burden or a bore. Such feelings can only mean that we are in the wrong job or we have been neglecting our mental machinery. Lastly, we can never achieve happiness if we are beset by anxiety and worry about the future. As Carlyle has said: 'Our main business is not to see what lies dimly at a distance but to do what lies clearly at hand.' If we, as physicians, can guide even one neurasthenic derelict into a happier way of life, we will have done a job; even more, we will have gained a friend."

### Taxed to Supply It

WE MIGHT pause here to ask what has become of all the billions of dollars that have been collected in this era of the special planners to meet the obligations of the government in the matters of retirement pay, old-age pensions, and unemployment benefits that are provided for in the present law. The fact is, this money, collected from employees and their employers alike, has been used to pay the current expenses of this extravagant regime. When the time comes to meet the purposes for which it was collected the people will again be taxed to supply it.

—From a speech by HON. A. L. MILLER (Nebraska), in the House of Representatives, December 7, 1943, on the Wagner-Dingell bill, Regimentation and Bureaucracy, published in *Ohio State M. J.*, February.

# IT'S A FULL HOUSE

men and women stay on the job when they guard their hands with . . .

# PLY Liquid PROTECTION!

Only most popular PLY formulas come in liquid form. Dispensers packed with initial orders. No charge.

Mild occupational skin irritations often develop into disabling dermatoses . . . keeping workers from their jobs, slowing up production. Proven PLY protection, in convenient, liquid form, is applied like any hand lotion. It dries quickly and completely, forms a barrier against oils, solvents, grime, chemicals of all kinds. There is a specific PLY formula for each group of skin hazards. Like thousands of the nation's leading industries, you too can maintain a full house if you specify PLY.

*Read the amazing story of PLY Creams and Liquids, together with valuable data on prevention of skin diseases in industry. Write for FREE booklet: The Answer to Industrial Dermatitis.*

THE MILBURN COMPANY

3246 E. Woodbridge—Detroit 7, Michigan

PIONEERS OF SKIN PROTECTION IN INDUSTRY

# Rx DESITIN OINTMENT

*The External Cod-Liver Oil Therapy*

**USED EFFECTIVELY IN THE TREATMENT OF**

**Wounds, Burns, Ulcers, especially of the Leg, Intertrigo, Eczema, Tropical Ulcer, also in the Care of Infants**

Desitin Ointment contains Cod-Liver Oil, Zinc Oxide, Petrolatum, Lanum and Talcum. The Cod-Liver Oil, subjected to a special treatment which produces *stabilization* of the Vitamins A and D and of the unsaturated fatty acids, forms the active constituent of the Desitin Preparations. The first among cod-liver oil products to possess unlimited keeping qualities, Desitin, in its various combinations, has rapidly gained prominence in all parts of the globe.

Desitin Ointment is absolutely non-irritant; it acts as an antiphlogistic, allays pain and itching; it stimulates granulation, favors epithelialisation and smooth cicatrisation. Under a Desitin dressing, necrotic tissue is quickly cast off; the dressing does not adhere to the wound and may therefore be changed without causing pain and without interfering with granulations already formed; it is not liquefied by the heat of the body nor in any way decomposed by wound secretions, urine, exudation or excrements.

**DESITIN POWDER**

*Indications:* Minor Burns, Exanthema, Dermatitis, Care of Infants, Care of the Feet, Massage and Sport purposes.

Desitin Powder is saturated with cod-liver oil and does not therefore deprive the skin of its natural fat as dusting powders commonly do. Desitin Powder contains Cod-Liver Oil, (with the maximum amounts of Vitamins and unsaturated fatty acids) Zinc Oxide and Talcum.

Professional literature and samples for Physicians' trial will be gladly sent upon request.

*Sole Manufacturer and Distributor in U. S. A.*

**DESITIN CHEMICAL COMPANY**

70 SHIP STREET PROVIDENCE, RHODE ISLAND


## Allowable Concentrations

AT A RECENT meeting of the committee of the American Standards Association concerned with approval of allowable concentrations of toxic dusts and gases, it was reported that six standards had been approved during the present calendar year, and that altogether 12 standards had been promulgated under the auspices of the committee since its reorganization two years ago. The standards now being considered are on methanol, styrene monomer, formaldehyde, trichlorethylene and acrylonitrile. A standard on toluene has been approved and published. The proposed standards for oxides of nitrogen approved by the committee are now being processed through the Safety Code Correlating Committee. Considerable discussion was given to the preparation of a standard for exposure to silica dust. It was finally decided to prepare a standard that would take into consideration the data now available for threshold limits for various industrial dusts with a silica content. The consensus was that no single maximum allowable concentration could be developed in view of the fact that no two dusts containing silica have the same effect on health, even when the silica content is the same. The chairman was authorized to appoint subcommittees to consider the following standards: methyl chloride, which is now being used in place of Freon as a refrigerant; hydrofluoric acid, fluorine and fluorides; and radon, gamma rays and radium dust. It was agreed by the committee that the recently circularized code on carbon tetrachloride should be rewritten, with a footnote to the effect that subjective symptoms may be experienced when workers are exposed to concentrations lower than 100 parts per million and, for that reason, that attempts should be made to achieve concentrations lower than the standard recommended.

—From *New England J. Med.*, February 3.

## "Suddenly Ill"

A NEWS ITEM, describing a walkout of the operating personnel of Montreal's streetcar and bus lines, says the Tramways Company calls it "a complete strike, strictly from an inter-union dispute" with no questions of wages or working conditions involved, while the Canadian Congress of Labor, bargaining agent for the employees, disclaims all responsibility, "asserting that it was presumed the men who were not working had been taken 'suddenly ill.'"

## Health Leaflets

HEALTH education, as attempted by the Westinghouse Medical Department, does not encourage self-diagnosis and self-care in time of illness. The adage which describes the patient who appoints himself as his own doctor as a very unwise sort of individual holds true to a greater degree than ever before. For some reason, many people enjoy playing the role of physician regardless of the consequences. It is our pious hope that nothing in our health program will encourage such conduct. But, it is likewise our earnest wish that our programs may prove helpful in avoiding preventable disease and in securing proper and adequate medical aid whenever necessary. Because of the demands of expediency, particularly under the stress of war, our programs are in the form of printed leaflets which convey to the reader vital health messages accurately, briefly, and, we trust, interestingly. The leaflets are frequently illustrated to add to the clarity of the message and to enhance their reader appeal. The program for 1944 contains the following subjects to be presented in the order mentioned at monthly intervals: Rheumatism; Open Wounds; Tuberculosis; Hay Fever; Infant Immunization; Indigestion; Diabetes; Recreation; The Common Cold; Syphilis; Sleep; and Care of the Eyes. This proposed series will be subject to such change as special circumstances or unexpected needs may require. It is, however, not a tentative program but the list of projected publications which will be adhered to unless other subject matter should become more pertinent or more urgently needed.

—FRANK M. GATTO, M.D., Director of Health Conservation, in Westinghouse *Safety News*, February.

## "The Sacro-iliac Slip"

THE *Journal of the American Osteopathic Association* (February, 1944) contains the following review of The Principles and Practice of Industrial Medicine, edited

## "The honey guarded with a sting"

'Gelusil' Antacid Adsorbent has removed the "sting" from what is probably the most effective therapeutic agent for peptic ulcer, alumina gel. Heretofore, control of gastric symptoms was only too often achieved at the cost of distressing and persistent constipation. By providing a unique form of alumina, entirely resistant to gastric hydrochloric acid, 'Gelusil' Antacid Adsorbent maintains the characteristics of a true gel in the stomach and does not break down to produce astringent, constipating aluminum chloride. Nor does acid rebound and alkalosis occur to minimize the prompt and lasting relief achieved by 'Gelusil' Antacid Adsorbent.

Supplied as a gel as well as in tablet form, 'Gelusil' Antacid Adsorbent provides stable, nonreactive aluminum hydroxide and magnesium trisilicate.

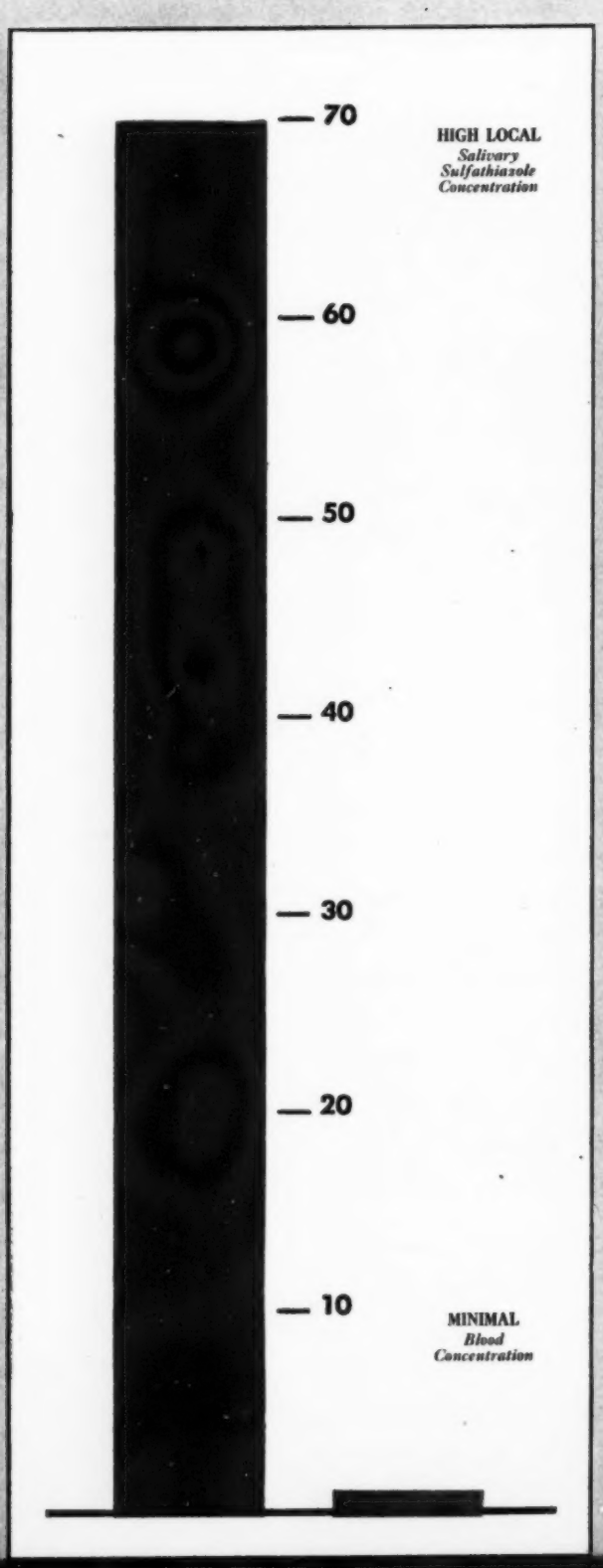
**Each teaspoonful of 'Gelusil' Antacid Adsorbent** contains 7½ grains of magnesium trisilicate suspended colloidally in 6.5% alumina gel. Each tablet of 'Gelusil' Antacid Adsorbent provides 7½ grains of magnesium trisilicate with partially dehydrated alumina gel corresponding to 4 grains of aluminum hydrate and equivalent to one teaspoonful of the liquid... Bottles of 6 and 12 fluidounces. Boxes of 50 and 100 cellophane wrapped tablets.

WILLIAM R. WARNER & CO., INC., NEW YORK AND ST. LOUIS

# 'GELUSIL'

*antacid adsorbent*

WARNER




# CHEMOTHERAPY ON THE SPOT WITH

*White's*

# *Sulfathiazole Gum*

THIS new technique of local chemotherapy makes possible a high *topical* concentration of dissolved sulfathiazole throughout the entire oropharyngeal area—and for prolonged periods. Yet even with maximal dosage—and even in children—blood levels of the drug are so very low that there is minimal risk of the untoward reactions frequently associated with *systemic* treatment with sulfonamides.

One tablet, chewed for one-half to one hour, promptly initiates a high salivary concentration of locally active (dissolved) sulfathiazole—and *maintains* throughout the maximum chewing period an average concentration of 70 mgm. per cent.

Yet an average adult, chewing a total daily dosage of 8 tablets, for as long as an hour each, does not develop a blood level of sulfathiazole greater than 1 mgm. per cent.

The advantages of this new technique for treatment of sulfonamide-susceptible infections of oropharyngeal areas are obvious. White's Sulfathiazole Gum is supplied in packages of 24 sanitaped tablets, in slip-sleeve prescription boxes—on prescription only. White Laboratories, Inc., Pharmaceutical Manufacturers, Newark 7, New Jersey.

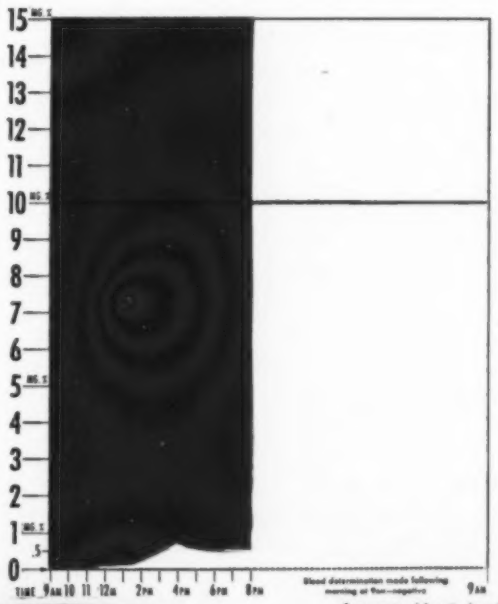
***Generally maintained blood level in systemic therapy: 5 to 15 mg. percent (average 10 mg. percent).***

Chart contrasts sulfonamide blood level commonly maintained in *systemic* treatment, with that attained even with maximal dosage of Sulfathiazole Gum.

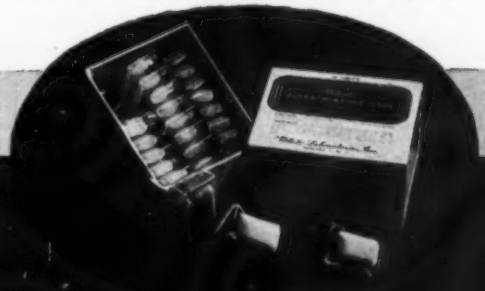
White area represents the sulfathiazole blood levels in an experimental adult group (average weight—153 pounds), each chewing 24 Sulfathiazole Gum Tablets over a 12-hour period. (Two tablets chewed every hour for one-half hour.) Sulfathiazole blood determinations were done at the intervals indicated on the base-line of chart. At no time was a level even as high as 1 mgm. % reached.

In an experimental group of children and adolescents, each of whom chewed 12 tablets of White's Sulfathiazole Gum, each tablet for one-half hour every hour, similar low blood levels were attained.

Since, in systemic therapy with sulfonamide compounds, blood levels of 5 to 15 mgm. % (averaged in green portion of chart as 10 mgm. %) are generally maintained, the use of White's Sulfathiazole Gum—even with maximal dosage—virtually obviates toxic reactions frequently associated with systemic treatment.




***Average blood level attained with maximal dosage of Sulfathiazole Gum.***



# *White's Sulfathiazole Gum*

FREE BOOKLET
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An illustrated booklet covering the apparatus and equipment for various blood plasma procedures is now available. This booklet not only lists the basic apparatus but contains diagrams of donor, pooling and administration assemblies as well as full specifications on the apparatus. A convenient bibliography is included for those who wish to review the literature on the preparation of blood plasma. The equipping or remodeling of a blood bank and plasma processing laboratory is in reality a problem of plant engineering and requires a fairly wide range of apparatus and equipment. To better serve the laboratories installing a blood bank our technical staff has made a thorough study of the various processes now in use. These men will be glad to work with you in planning the new blood bank, in installing the equipment and in training your personnel.

*Laboratory Supply Division*

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by FRED J. WAMPLER, M.D., DR. P.H. (The Williams & Wilkins Company. Baltimore, 1943, 593 pp., $6.00): "Thirty-three writers from every field of industrial medicine combined to produce this work based on the practice of adult health as distinguished from that of trying to make sick people well. They were keeping in mind the fact that many practicing physicians today have to do with the medical care of industrial workers when they have never had experience in that line before, and that more emphasis must be placed on these things in medical schools. Some new technics are brought out in this book with the idea that the alert physician will develop other methods of his own. Among the subjects considered are: Notes on History, Methods Employed in the Appraisal and Control of Industrial Health, Medical Services in Industry and the Industrial Physician, Governmental Agencies in Industrial Hygiene, Effects of Temperature and Humidity on Industrial Workers, Effects of Abnormal Atmospheric Pressures, Light, Lighting and Seeing, Fatigue, What Industry Can Do to Improve Nutrition, the Industrial Back, Women in Industry. It is to be hoped that most of the information is better balanced than that relating to sacro-iliac slips. 'The sacro-iliac slip, or subluxation, will receive no mention here other than to state that despite its refutation by reputable investigators, it still finds wide acceptance as a common cause of backache. Invariably this diagnosis is made without benefit of x-ray. In the absence of fracture to the pelvis, the writer has never seen a single recognizable instance of sacro-iliac subluxation. To make this diagnosis without positive x-ray proof is to practice quackery of the most disdainful [sic] type. It is time that the indiscriminate use of this term should cease.' (p. 469.) Contrast that with the virtually four pages given to herniated nucleus pulposus."

### A.C.S. Approval

THE MEDICAL department of the Westinghouse Electric & Manufacturing plant at Mansfield, Ohio, has been awarded a certificate of approval by the American College of Surgeons. Organized in 1918 under the direction of one nurse, the medical department today includes a director of safety, H. W. DAILEY; two other doctors subject to call, DRS. L. A. HAUTZENROEDER and J. S. HATTERY; five graduate nurses, MISS DORIS MOORE, MISS LILLIAN HEFFELFINGER, MISS GRACE LYON, MRS. ELLEN YORK and MRS. FLORENCE LEHMAN; an 11-man plant-wide safety committee, and 38 safety inspectors. During the past 18 months the medical department has increased its floor space 50% and added much new equipment, including a telebinocular instrument to determine visual efficiency and detect color blindness. One of the 1942-1943 activities of the department was the training of 375 employees in Red Cross first aid work. The plant decreased its accident rate almost half in 1943 as compared with the preceding year. The record up to December 1 was 2.07 accidents per million man-hours of work, while in 1942 it was 4.02, and in 1941, 6.32.

### Dr. Gafafer's Book

DR. J. J. WITTMER, in *The Crippled Child* (Lorain, Ohio), February, 1944, reviews the Manual of Industrial Hygiene, edited by WILLIAM M. GAFAFER, D. Sc. (W. B. Saunders Co., Philadelphia, 1943, 508 pp., $3.00) as follows: "This is a timely book. It has been prepared by a division of the U. S. Public Health Service. Among its contributors are outstanding specialists in the fields of surgery, engineering, statistics, dentistry, nursing and health education. The health problems of industry in wartime are manifold. Just when maximum production is demanded, the young men, the physically strongest and soundest group in industry, are withdrawn and must be replaced by older men, by women, and by the less physically sound. Doctors and nurses are increasingly needed, therefore, but they, too, are leaving civilian life for military service. Other problems are brought about by longer working hours; by shift schedules, which upset the eating and sleeping habits of workers;

M·S·A

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Protects against dermatitis from cutting oils of low water content, carbon tetrachloride, and other chlorinated solvents, kerosene and other petroleum distillates, vegetable and mineral oils. FEND-E water soluble Cream, like all FEND Creams, is easily applied, and readily removed at the end of each work period.

**FEND-A**

This water soluble cream protects against dermatitis from excessively staining and adhering compounds, such as in spray painting, pitch and tar, bitumastic paint, and dry metallic dusts. FEND Creams are rubbed well into the skin, care being taken to cover all exposed skin surface.

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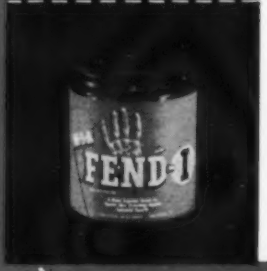
FEND-O provides safe barrier protection in handling gun powder and explosives (such as tetryl and T.N.T.), coal tar derivatives, wood preservatives, and solvents such as cold water, alcohols and acetone, without interfering with the normal action of the skin or skin glands.




**FEND-I**

A water-repelling cream, FEND-I affords protection against dermatitis from strong acids and strong alkalies, cutting oils with over 10% water, formaldehyde, phenols, metals and metallic salts and constant immersion of hands in hot or cold water. Fend-I rubs in well, but leaves a slightly more oily film on the skin than Fend-E.

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This is a modern, industrial skin conditioner. Ideal for use after work is completed and skin has been thoroughly cleansed. Helps restore the skin to its natural condition. FEND-X is also recommended for coating the nasal passages to prevent irritation and nosebleed prevalent in many operations such as electroplating, welding and soldering of certain materials.

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by nervous strain resulting from the increased tempo and personal difficulties; by the adjustments to industry of increasing numbers of women, many with families to be cared for and shopped for in times of rationing and restrictions. The 'Manual of Industrial Hygiene' proposes solutions to these problems and others. It gives advice on how to plan and administer a plant medical department, and how to cooperate with and use community medical facilities. It discusses some of the diseases which cause most trouble in industry, such as occupational, respiratory, and venereal diseases, and what the engineers, sanitary experts, and educators can do to remove their causes and to build up the resistance of the population to them. It exhorts employers to utilize the country's manpower effectively. Part of this manpower has long been overlooked. With a surplus of workers, employers have selected the soundest, the quickest, the superlative, and have scorned all others. Now they are urged to reexamine the supply of available workers, and to employ the physically handicapped and those under medical treatment who can be used without injury to themselves or others. The Manual observes that many people with orthopedic defects, including amputations, and other 'static' defects have been working satisfactorily for years. Only diseases which are acute or 'dynamic' —that is, progressive—prevent employment, and even people with such diseases can sometimes do useful work in sheltered workshops or in the home. The Manual points toward the future in industrial medicine and hygiene. Its statement that 'Industry is a part of community enterprise and its workers a part of community population' indicates the role which industry is expected to play in relation to the community which supports it and which it serves. DR. GAFAFER, who is well known in the field of industrial medicine and hygiene, has brought his many years of experience within the confines of this book. I feel that all employers would benefit, not only by reading, but also by studying this book."

### Disk Lesions

DISK LESIONS are about twice as common as is duodenal ulcer. This high incidence may be explained by the evolutionary development of the human spine. The vertebral column of man does not differ essentially from that of many quadrupeds; it is closely similar to that of the cow. This means that a system of bones and joints that was originally adapted to bear almost no vertical stress sustains in man the whole impact of the upright posture and locomotion. In some persons the vertebral bone is less resistant to strain than are the disks, but in a majority of adults the disk cartilages are the weakest parts of the spine. Wear and tear cause numerous minimal injuries from which the disk rarely recovers completely, since its cartilage cannot be effectively regenerated. Cartilage undergoes degeneration, with increase of fibrous tissue. The result is loss of turgor and volume of the disk. The same changes may be caused by a single severe injury and by certain diseases of the adjacent vertebral bodies from which the disk receives its nutrition. Disk rupture is one of the injuries which may be followed by degeneration. No matter what is the cause of the injury and degeneration, flattening of disks leads to narrowing of the corresponding intervertebral spaces, associated with displacement of articular processes, narrowing of the neural foramen and abnormal contact between vertebral bodies.

—From "Pathology, Clinical Manifestations and Treatment of Lesions of the Intervertebral Disks," by ALBERT OPPENHEIMER, M.D., in *New England J. Med.*, January 27.

### Health Advance

RECENTLY I saw one phase of health work in operation on Kauai. Mr. Lindsay Faye conducted me over a garden project. He had set aside 100 acres for the development of all types of market vegetables. He saw that with the wartime restrictions, he not only had to think of his own plantation people, but, for the proper protection of his own people, he had to enlarge his project to protect the health of the whole community. Only one-third of what he raised was needed on his plantation. He developed a market store at which the products from the field arrived on certain days. There you saw all the different vegetables in great bins, and people could come in and order what they desired.

# "Pain kills like hemorrhage by exhausting vitality!"

*Guillaume Dupuytren*

Dupuytren — the great French surgeon — early recognized that pain is not only a symptom, but a pathogenic, destructive factor as well. This is especially true in hemorrhoidal conditions in which there is both pain and hemorrhage, and in which the venous engorgement is aggravated by the inflammatory reaction of the intensely irritated nerve endings.

The rationale of inhibiting hemorrhoidal pain by prolonged local anesthesia, so as to afford the calmed tissues an opportunity to retrogress to normal, is thus obvious. But practical experience is better than theoretical consideration. Since 1930, in many hundred thousand cases

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has proved its therapeutic usefulness by . . .

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In ½-oz. insufflator tubes. (Nozzle attachment can be obtained at slight additional cost.)

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(Sulfanilamide 10% and Allantoin 2%)

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Priority was given the hospital purchasing agent, since plenty of vegetables were thought necessary to get sick people well. They are also necessary to keep well people from getting sick. By cultivating and harvesting these health (mineral and vitamin) units, he helped keep his community solvent from the health standpoint. Recently a national magazine said, "that with an inadequate pre-natal diet the fetus suffers to a greater degree than the mother." Such statements are just being published, but have been proved true. Can we afford to raise defective offspring? Some of our managers have strongly said, "No!" This perhaps is another health advance in industry. Just as 32 years ago Dr. Hamilton found no industrial medicine in America, so today the concept which at present is in vogue on some of our plantations, i.e., the necessity of helping the laborer and his family to understand and obtain the proper food to keep him well, is getting health results to which industry can well afford to pay attention. Less than 30 years ago lead manufacturers were incensed when certain doctors called attention to the fact that they were responsible for the deaths and incapacities developed by their workers in their mills. Today that responsibility is accepted as a necessity. In most states the manufacturers are required by law to protect their workers. Tomorrow??? Will it be industry's job—or will it merely be for its own protection—to see to it that the workmen and their families shall have knowledge of the type of food that will keep their lives solvent, and will it be part of industry's responsibility to see that these elements are procurable by their workers? Is this any more paternalistic than the idea of protecting a worker from lead, dust or tuberculosis? Manufacturers have found it economically sound to give such protection because it kept their workers healthier and more capable of doing the day's work. When healthy, the workers are less apt to be dissatisfied. Is including this type of health project as part of intelligent selfishness very different from the others that are now accepted?

—From "Analysis of Health on Our Plantations," by NILS P. LARSEN, M.D., in *Plantation Health*, 8:1, January, 1944, published quarterly at Aiea, Oahu, T. H.

### 22 Days per Accident

A MILLION fewer industrial injuries in 1944 was the goal set by Secretary of Labor Frances Perkins before a meeting of the Department of Labor's National Committee for the Conservation of Manpower in War Industries February 15. Its achievement, she pointed out, would amount to about a 40% reduction from the 1943 total of nearly 2,500,000 injuries. "This would result in the saving of some 22,000,000 days of work. In manufacturing alone it would increase the number of workers on the job each day by 24,000. Many non-manufacturing establishments are, of course, directly engaged in war work, and a curtailment of injuries in them would be of direct benefit to the war effort. Fewer injuries to persons employed in operations not directly connected with the war would do much to maintain an adequate supply of labor for war production."
—OWI Release.

### Syphilis in Industry

AN EXAMPLE of a well-operated plan was published by Yeager *(Connecticut M. J.*, 7:278-280, 1943). Since 1934 the Remington Arms Company has been giving complete physical examinations to all employees, including a blood serologic test for syphilis. Applicants in a communicable or a contagious stage of syphilis cannot be employed, in conformance with the Connecticut state law. New employees in the non-infectious stage can be hired provided they take adequate treatment, a plant physician keeping check on this. Provision can be made for treatment at clinics for applicants who are unable to pay, and the employee's disease is kept strictly confidential. Applicants or employees in a communicable stage are considered for employment after they have been rendered non-infectious by treatment. Although the Selective Service statistics show that Connecticut has the lowest percentage of syphilis in any state, the incidence among the employees of the

# ABSENT WITH OUT *Logic*

The voluntary choice of remaining at home during two or three days of the menstrual period cuts sharply into the attendance of many women at critical war work.

In special cases, the need for discriminating therapy—analgesic, hormonal, emmenagogic, even surgical—may justify home confinement.

But for so many, absenteeism is motivated solely by a desire to avoid the risk of physical distress and emotional uncertainty, caused by vulval irritation from perineal pads . . . or by fear of olfactory offense . . . or conspicuous bulging under slacks or coveralls.

That such risks can be safely avoided by the use of Tampax menstrual tampons has been known for years by thousands of women in all walks of life—in the theater, in sports, business or social life. For them, this improvement in menstrual hygiene has provided a genuine aid to uninterrupted activity.

They have found that Tampax is free from the prospect of vulvovaginal irritation. It cannot cause noticeable bulkiness, or expose the flux to odorous decomposition. Its three absorbencies permit selection, to meet personal daily needs, amply and safely.

Compression in a *one-time-use* applicator facilitates insertion without orificial stress, and exclusive *flat expansion* assures comfortable accommodation in situ. Special *cross fiber stitching* prevents disintegration of the tampon, so that dainty removal may be effected without probing.

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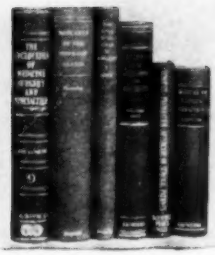

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Its potent hydrocholeretic action has made Decholin (the original dehydrocholic acid) a widely accepted addition to the surgeon's armamentarium.

Administered preoperatively, Decholin (oral) or Decholin sodium (intravenous) produces a copious outpouring of thin, free-flowing liver-bile, secreted under increased pressure, which causes the bile ducts and gallbladder to stand out prominently, facilitating identification and manipulation during surgery.

After cholecystectomy, when external drainage has not been instituted, Decholin tablets may be given as soon as tolerated, usually after 48 to 72 hours. The induced hydrocholeresis improves drainage of the common duct, aids in the removal of debris, reduces postoperative discomfort. If complete blockage due to a stone or tumor mass existed before surgery, Decholin hastens the resumption of bile secretion.

When the common duct is drained to the outside, Decholin assures free drainage, aiding in the removal of clots, inspissated bile, and small stones overlooked at surgery.

Decholin is contraindicated only in complete obstruction of the common or hepatic bile duct. Supplied in boxes of 25, 100, 500 and 1000 tablets.

*Physicians are invited to send for a copy of the 4th (condensed) edition of the brochure "Biliary Tract Disturbances"*

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PACE-MAKER OF BILE ACID THERAPY


Remington Company's Bridgeport works is even lower. The employees are most grateful to the company for making it possible to diagnose the condition, particularly those who had no previous knowledge of their infection or thought they were cured. The control of venereal disease in industry will save time and money for all concerned, as pointed out by Anderson *(Am. J. Syph., Gonor. & Ven. Dis.,* 27:432-438, 1943). It will also achieve a higher standard of efficiency and increase the industrial worker's earning capacity and life expectancy. The syphilitic blind cost society about $10,000,000 a year, and paretic patients in state institutions cost another $6,500,000. Congress appropriated $12,500,000 for the control of venereal disease in 1943, and the states will raise some $7,000,000. To each of these sums industry will contribute liberally through taxes. From the cost angle alone, therefore, industry has a considerable stake in venereal-disease control. The state health departments may have to provide mobile facilities for the employees in the smaller plants that have no regular medical service. One such department has a blood-test trailer operating among small plants and communities. It should be pointed out that the safest worker regarding the spread of syphilis is one with a positive serologic test for syphilis who is under treatment, after passing the infectious stage; he or she is also immune to reinfection. If venereal-disease control can be furthered by education of industrial workers, and industry itself can be shown the fallacy of discharging workers on the basis of a positive serologic test alone, a great step will have been taken. Strikes in war plants arouse the indignation of the public because of wasted time and money and loss of production. Venereal disease can be responsible for these same losses.

—From "Syphilis," by G. MARSHALL CRAWFORD, M.D., in *New England J. Med.*, January 27, 1943.

### Inoculations against Colds

ONE WAY in which absenteeism has been reduced in the plants of Walter Kidde & Co., New Jersey, manufacturers of fire extinguishers and raft inflation equipment, is through inoculations against colds. These are not required, but are offered without charge by the company's medical department to employees wishing to take advantage of them. There has been wholehearted cooperation on the part of the workers, and the cut in absences due to this commonest of winter ailments has been significant and encouraging. This measure is supplemented by the sale of multivitamin pills at cost, and their display in the cafeterias and other appropriate spots serves as a constant reminder of the part they can play in general health and well-being.

—Agency Release.

### Healthy Adults—Low Rates

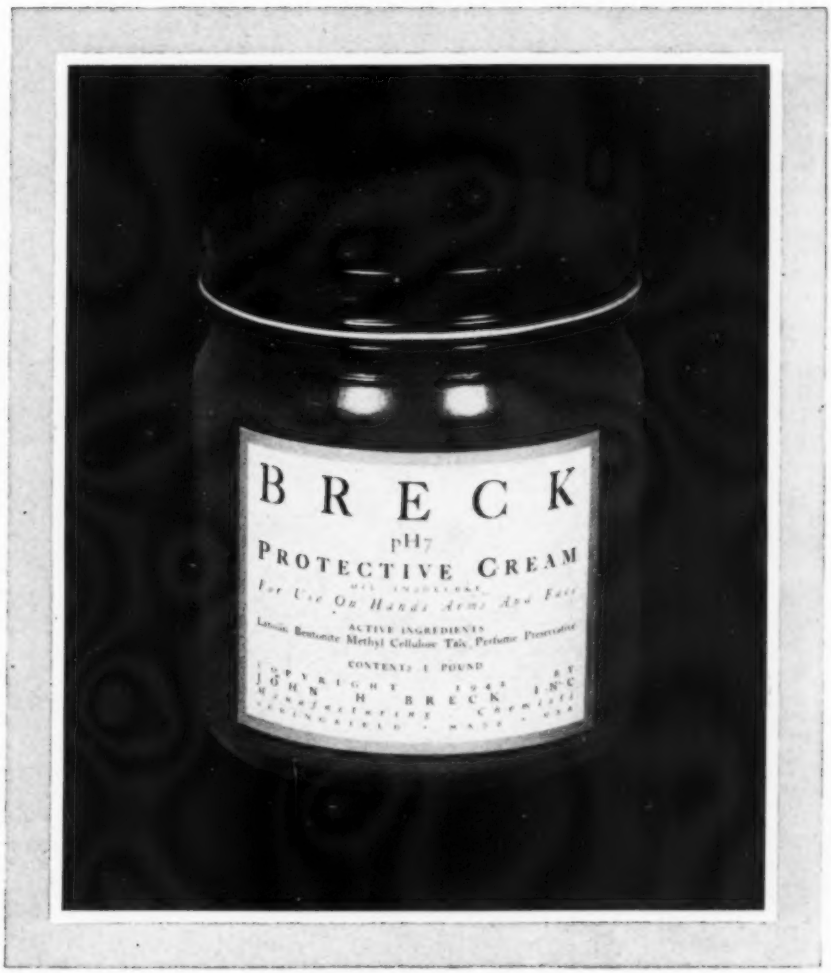
AT AIEA it was found that men working on a defense project could be insured economically at $1.50 a month. Out of this the plantation hospital received $9.43 a a day for hospitalization, and the doctors received full compensation. This stimulated the plantation doctor to analyze his own figures, and he found from his male laborers he had 256 office visits and 85 hospital visits, whereas from the women and children during the same period he had 697 office visits and 158 hospital visits. This indicates how any insurance scheme that selects a special group of healthy adults can afford much lower insurance rates than one trying to cover women and children. The plantations, however, require good medical work on their women and children in order to keep the men happy and contented and "in a state of good health."

—From *Plantation Health*, January, 1944, published quarterly at Aiea, Oahu, T. H.

### Benjamin Franklin, Pioneer

PRESENT-DAY knowledge adds up to quite a lot, even to the conclusion that "recovery from lead poisoning is usually complete, leaving no partial or complete disability," and reminds us that this generation again is the beneficiary of centuries of patient observation, deduction, and reasoning fused into another weapon for our use in preventing and alleviating human misery. Benjamin Franklin was a pioneer in the diagnosis of lead poisoning. In 1768, he

# BRECK



## BRECK pH7 PROTECTIVE CREAM

The aim of the Breck Organization has been to make a Protective Cream second to none ever since it was decided that a finely made protective cream could be a definite help to the war effort · Different formulas were carefully studied before our own chemist went to work · Today Breck pH7 Protective Cream is the finest cream we can produce · The formula of this cream has been freely given whenever the management of a war industrial plant wished to know the ingredients used in its manufacture · There is no soap or alkali in Breck pH7 Protective Cream and as the pH7 indicates it is neutral and will not interfere with the normal reactions of the skin · We believe that Breck pH7 Protective Cream is aiding in the control of Industrial Dermatitis in War Industrial Plants

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wrote to Cadwallader Evans that he had long believed the disease to be due "to a metallic cause only; observing that it affects, among tradesmen, those that use lead, however different their trades; as glaziers, letter founders, plumbers, potters, white-lead makers and painters." Drawing on his own background as a printer, Franklin expressed in another letter the belief that lead poisoning among typesetters was due to the particles of metal swallowed with their food by slovenly workers who ate their meals without washing their hands. "The presence of vapors, or fumes, or fine dust of lead compounds in the air breathed by workmen is the most important factor in occupational lead exposure," says the new Report (of the Committee on Lead Poisoning, Industrial Hygiene Section, A.P.H.A.) "however, lead compounds which contaminate the hands, food, tobacco, or other objects taken into the mouth, may not be ignored as means of exposure, even though the conditions be such that these compounds are not disseminated into the air breathed by men."

—*Am. J. Public Health*, February, 1944.

## According to OWI

THE Public Health Service's Division of Industrial Hygiene, operating through 38 states and eight local bureaus, has one of the largest undertakings in civilian health. It has direct and indirect supervision over working and living conditions of an estimated 30,000,000 workers. Many institutes (four or five day series of lectures) have been held throughout the country to establish the "framework" of industrial hygiene. This "framework" places strong emphasis on pre-placement examinations. Other features stress the medical set-up of the plant, supervision and machine guards, ventilation and lighting, sanitation and recreation facilities, and better health in the homes, including recreation and housing.

—Extract from Report by OWI, in *J. Am. Osteopathic Assoc.*, February, 1944.

## Venereal Disease Information

INDUSTRY, until recently, has been unable to make full use of the facilities of local and state health departments for the laboratory work required in blood tests for syphilis. This has been due to the fact that most of the laboratories have been taxed to capacity by Selective Service requirements. Now that the peak of mobilization has passed and induction rates are diminishing, many state and local health department laboratories can provide wider and more prompt blood testing facilities for venereal disease control programs in industry. The U. S. Public Health Service's Venereal Disease Control Program in Industry has been developed on a nationwide scale. For further information write the Division of Venereal Diseases, Headquarters, U. S. Public Health Service, Bethesda 14, Maryland.

—OWI Release.

## Achievement

WE ARE approaching victory on the battlefields, on the seas and in the air. The military command sends thousands into danger of death. Medicine receives them into its hospitals not by thousands but as a thousand individual men. It lavishes upon them the accumulated wealth of the rich competence of surgery. It places at their disposal the huge treasures of diagnosis and immunity from disease; it dispenses to them the tender arts that are the invention of service and devotion. And with what results? Our lowest hospital mortality rates in man's history, our smallest number of days of human suffering, our shortest periods of confinement in convalescence. Medicine has freed man to an extent little realized except by the physician, of the threats and dangers of disease on the battlefields. With what result again? Men are stronger to withstand the strains because medicine has been at the side of the military teacher during the training period; because medicine has detected by finer methods and more delicate attention the hidden incapacities that render a man less fit for the strains of military life.

—From "Medicine and Our Victory," by ALPHONSE M. SCHWITALLA, Dean, St. Louis University School of Medicine, in *Weekly Bulletin, St. Louis Medical Society.*

## Number One Problem

DR. ERNEST GOLDHORN, Chicago, dental surgeon for the Pullman Standard Car Manufacturing Company, told the 80th annual midwinter meeting of the Chicago Dental Society that the nation's "number one industrial health problem" is the

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Over half of ordinary all-glass syringes meet a premature end because of unnecessary tip breakage. This represents a needless waste of man-hours, material and money. Waste we can ill afford in time of war.
Some time ago B-D engineers made an interesting discovery: All syringe tips must be ground to seat the needle hub securely. On close examination, however, it was noticed that a circular scratch, fracturing the skin of the glass, was invariably left by the end of the grinding tool. Tips broke at this scratch, just as a window pane breaks at the scratch-line made by a glazier's tool. And so B-D tips were redesigned with a recess of unground glass just above the tip. Now, the end of the grinding tool revolves harmlessly in space.
Result—a tip approximately twice as strong and B-D Syringes that give you the longest possible life of useful trouble-free service.
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dental health of industrial workers. Through fear, indifference, ignorance or procrastination, he said, millions of workers have failed to receive any dental care and, as a result, have mouths that are incubators of infection.

### Utah Symposium

THE COMMITTEE on Industrial Health (DR. PAUL S. RICHARDS, Chairman), of the Utah State Medical Association, sponsored an Industrial Health Symposium on January 19, 1944, at Salt Lake City. This was attended by members of the medical and health professions, industrial nurses, members of the State Industrial Commission and others. The speakers and subjects were as follows:

**Wednesday Afternoon, Jan. 19**

WORKMEN'S Compensation" — Commissioner O. A. WIESLEY.

"State Industrial Hygiene Service"—J. L. JONES, M.D.

"The Industrial Clinic"—PAUL S. RICHARDS, M.D.

"Nutrition in Industry Under Rationing"—M. M. WINTROBE, M.D., Head of the Internal Medicine Department, University of Utah Medical School.

"Preventive Medicine in Industry"—MAJOR WM. B. FULTON, M.C., Chief, Industrial Hygiene Section, Ninth Service Command, Fort Douglas, Utah.

"Ophthalmology in Industry"—MAJOR J. L. KEYES, M.C., Chief of Eye, Ear, Nose and Throat Section, Bushnell General Hospital.

**Wednesday Evening**

DISEASES of the Chest in Industry"—L. U. GARDNER, M.D., Saranac Laboratory, New York.

"Disabilities in Silicosis" — GEORGE W. WRIGHT, M.D., Trudeau Sanatorium, Trudeau, New York.

"Industrial Dermatosis" — LIEUT.-COL. SAMUEL PECK, Senior Surgeon (R) Acting Chief, Dermatosis Investigations Section.

## TEN YEARS AGO in "INDUSTRIAL MEDICINE"

THE MEDICAL DEPARTMENT of an industry is, almost without exception, an index of the economic value the management places upon health service rather than what the medical officer desires it to be. If better medical service is desired in industry it is not so much a problem of the physician in industry as it is of the educating of the management to the value of such a service. Many large industries have already proved that the more extensive the health service rendered the better it pays.

—DR. VOLNEY S. CHENEY, in INDUSTRIAL MEDICINE, March, 1934.

EASTMAN KODAK employee James P. Sherry, age 34, suffering from severe headaches and increasing lameness in one leg, consulted DR. CHARLES S. GALLAHER, of the company's medical Department at Kodak Park, Rochester. DR. GALLAHER, finding an additional symptom in an abnormal condition of the eye opposite to the lame leg, diagnosed the trouble as an affection of the brain; feared the possibility of an abscess; ordered an x-ray examination. (The result was a radiograph showing a foreign body, completely embedded.) Examination of the scalp thereupon revealed a fine scar. A second radiograph, from another angle, showed the doctors that the foreign body was not a bullet, as might otherwise have been thought. MR. SHERRY didn't remember that he had ever sustained a head injury, especially such as might account for his symptoms. But DR. WARD WILLIAMS, after consultation with DR. GALLAHER, and DR. ARTHUR P. REED, representative of the Veterans Bureau in Rochester, operated on January 5, and removed the blade of a pocket knife from his brain. The only explanation the doctors and MR. SHERRY can arrive at has to do with shrapnel in the Argonne. MR. SHERRY was struck on the elbow by shrapnel, and for hours afterward was dazed. It is believed that the knife blade was in the same shell, and was driven through the skull by the same burst. Probably it went in red hot and cauterized the wound it had made. No other explanation seems plausible. In any case, MR. SHERRY harbored the blade for more than 15 years without knowing it. The piece of steel was very rusty when it was taken out; fibrous tissue had formed around it.

—From "One for the Medical Department," in INDUSTRIAL MEDICINE, March, 1934.


QUESTION: WHAT'S NEW IN "ROUTINE" URINALYSIS?

ANSWER: THE NEW *Acetone Test* (DENCO)

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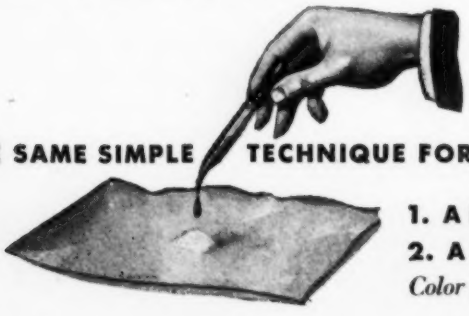

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is, but so far I have learned of no other ncrete suggestion which provides the neces- ry safety valve which such an arrangement this would give. It would be tragic if a lot small business concerns were wrecked and heir workers thrown into idleness because of heir inability to cut through the red tape nvolved in getting their claims settled.

RESPONSIBILITIES OF CONTRACTORS

While making these statements with re- ard to action by the Federal authorities, I cognize, also, that business concerns which old war contracts have a responsibility on heir part to facilitate speedy settlement of rminated war contracts. They have the re- onsibility for preparing their claims ac- rately and speedily and presenting them proper form. Some progress has been de toward getting a recognition of the t that industry must play in this respect, currently more and more experience of sort is now being gained. The con- tting services of the Government, I know, e a very helpful attitude toward this sit- tion, and the local office of W. P. B. has tablished a regional advisory service for war dants faced with problems resulting from ntract termination. That is a very helpful velopment.

egislation to make possible the prompt ttlement of terminated war contracts is eded now. It will be unsafe to wait until ere is a deluge of contract terminations to h through legislation on short notice. he problem is too complicated to be dealt ith effectively in that way.

MATERIALS FOR CIVILIAN PRODUCTION

In addition to making provision for th ttlement of terminated war contracts, ther also the task of facilitating the flow terials for civilian production as soon those materials can be spared from war p es I hope that we shall not have une yment here in Massachusetts becau eded materials, which are physically in tence in the United States, are unavailable use by manufacturers as a result of leg- ative or administrative restrictions. The isting legislation vesting the priority power the President, which power of the Presi- nt is delegated to the Chairman of the War oduction Board, is probably adequate to vern the flow of materials, but it may be cessary for the Congress to make sure that he administration of the priority power by he War Production Board is directed effec- ively toward the speedy and smooth resump- ion of civilian production. The War Pro- duction Board should be expected to elim- nate its limitation orders, its conservation rders, and its allocation systems just as pidly as the needs of the war program per- it.

Because of their effects on plans for re- ployment, I foresee that these problems settling canceled contracts and securing he supplies of raw materials for civilian pro- uction will presently be matters of wide- pread concern here in Massachusetts.

To summarize, my specific recommenda- ions are that legislation should be enacted o cover the following points:

SETTLEMENT OF TERMINATED WAR CONTRACTS

1. The terminated contracts should be set- d by negotiation by the contracting agen- es of the Government, and the negotiated ttlement should be final in the absence f fraud or misrepresentation.

2. Prompt partial payments amounting to fairly large percentage of the claim should e assured to each contractor upon submittal f a certified statement of the claim, subject, f course, to a penalty for perjury.

3. Local settlement committees should be empowered to authorize partial payments when a delay of over 30 days occurs on the part of the Government agency.

4. Contracting agencies should be required to give prompt clearance of claims on work in process. There should be clear-cut pro- cedures for authorizing the removal of Gov- ernment-owned inventories and machines, with storage at Government expense, in order that civilian production may be started.

5. The dilemma of the subcontractors must be resolved. At the present time the Govern- ment exercises the right of approving all payments in settlement of subcontracts but does not assume any responsibility to the subcontractor, with the result that the sub- contractor in many cases cannot secure ac- tion by either the prime contractor or the contracting agency. I suggest that the local settlement committees proposed above should be empowered to approve settlement of sub- contracts if a delay occurs in approval by the contracting agency.

B. DECONTROL OF MATERIALS

1. As soon as war conditions permit, the rules for the release of scarce raw materials should be revised, with a view to facilitating the rapid resumption of civilian production.

## A Magnificent Job

EXTENSION OF REMARKS
OF
**HON. LOUIS LUDLOW**
OF INDIANA
IN THE HOUSE OF REPRESENTATIVES

*Tuesday, January 11, 1944*

Mr. LUDLOW. Mr. Speaker, Indianapolis and Indiana are very proud of the great pharmaceutical house of Eli Lilly & Co., which has processed its millionth blood donation without a cent of profit. This record is in keeping with the fine, generous spirit which this firm always has manifested in the service of our country and which long ago brought to it the recognition of an Army-Navy E award. Commenting on the company's contribution to the blood campaign, which means so much in saving the lives of our precious boys, the Indianapolis News says editorially:

LILLY'S CONTRIBUTION

In the midst of charges that some concerns are making an unholy profit from war contracts it is heartening to learn that the Indianapolis laboratories of Eli Lilly & Co. have processed 1,000,000 blood donations entirely on a nonprofit basis.

In addition to performing this service at cost, the expense involved has been decreased constantly through the introduction of more efficient methods.

There certainly could have been nothing unethical if the Indianapolis pharmaceutical house had sought a minimum profit for the work it has been doing.

Donations of blood at Atlanta, Chicago, St. Louis, Detroit, Cincinnati, Louisville, Columbus and Indianapolis have been converted into live-saving plasma at the Lilly plant, involving the installation of new equipment and the employment of much additional skilled personnel.

The patriotic Americans who donated this blood, however, got nothing for their contributions and the Lilly Co. determined that its connection wiht the effort to strengthen the wounded on every fighting front should be entirely shorn of private gain. From beginning to end, it has been and is—a magnificent job.

## The Gates Must Not Be Closed

EXTENSION OF REMARKS
OF
**HON. SAMUEL DICKSTEIN**
OF NEW YORK
IN THE HOUSE OF REPRESENTATIVES

*Tuesday, January 11, 1944*

Mr. DICKSTEIN. Mr. Speaker, unde leave to extend my remarks in the RECORD, I include the following editorial fro the Daily Mirror of January 4, 1944:

THE GATES MUST NOT BE CLOSED

When Congress reconvenes on January it should take up the Gillette-Taft-Baldwi Rogers resolution.

This resolution calls for the formation a Presidential commission to create machi ery, in conjunction with the United N tions, to rescue the millions of Jews wh are now being systematically exterminate by the Nazis and their Quislings.

When the Presidential commission gets work, one of the first things it should do to seek the abrogation of the Chamberla "White Paper" of May 1939.

At present, Palestine is being administere by Great Britain in conformity with the po icy embodied in the "White Paper," by v tue of which Jewish immigration into Pale tine is now limited and is to be practica stopped after March 31, 1944. The Jews a to be reduced to a permanent minority 33⅓ percent in the country and the sale land to Jews is to be practically prohibited.

A DIRECT REPUDIATION

This is a direct repudiation on England's pa of the League of Nations Mandate and the Balfour Declaration incorporated in th mandate of 1917.

According to this declaration, Palestine w to become a national Jewish home under th protectorate of England.

In 1920, after the Jews had created a mo ern civilization in what was practically Arabian desert, England turned her ba on her solemn promise of 1917.

This perfidity of Britain toward the Je was denounced by no one more vigorous than by Winston Churchill in Parliament the debate on the "White Paper" in 19 when he said:

MR. CHURCHILL'S REGRET

"As one intimately and responsibly co cerned in the earlier stages of our Palestin policy, I could not stand by and see solem engagements into which Britain has enter before the world set aside for reasons of a ministrative convenience or for the sake of quiet life. I should feel personally emba rassed in the most acute manner if I len myself by silence or inaction to what I mus regard as any act of repudiation.

"I regret very much that the pledge of th Balfour Declaration, endorsed as it has bee by successive governments, and the cond tions under which we obtained the manda have both been violated by the Governmen proposal.

"I select one point upon which there plainly is breach and repudiation of the Ba four Declaration—the provision that Jewis immigration can be stopped in 5 years' tim by the decision of an Arab majority. That a plain breach of a solemn obligation."

As the Palestine Mandate was ordered b the League of Nations, it cannot be abro gated even by Great Britain herself witho the consent of the League.

A SOLEMN OBLIGATION

But the League did not give its consent the 1939 abrogation.

This magazine is published to promote sound thought upon and concerning industrial medicine and traumatic surgery. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited.

Industrial Medicine

Reg. U. S. Pat. Off.

The editors will exercise care in checking on the accuracy of data printed, but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same, in the current or any subsequent issues, as they may be inclined.

The Journal of Industrial Health, Occupational Diseases and Traumatic Surgery

With which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery."

The Science, the Law and the Economics of Industrial Health

Volume 13 | March, 1944 | Number 3

# Gynecological and Obstetrical Problems

*—Of the Industrial Physician—*

MAX R. BURNELL, M.D., F.A.C.S.,
*Medical Director, AC Spark Plug Division,*
*General Motors Corporation,*
*Flint, Michigan*

NO FIELD of medicine has experienced such sweeping changes as that of industrial medicine. It was but a few years ago that the activities of the industrial physician were confined almost entirely to occupational injuries—the repair of lacerations and the adjustment of fractures. Today, the larger manufacturing corporations who keep accurate records of sick absenteeism report that, of every 100 days lost by the employee from illness and accident, but six of these days can be charged to occupational cause; 94 of the 100 days lost are the result of *non-occupational* illness and accident.

The role, then, that the present-day industrial physician plays has been changed from that of a "medical repair-man" to that of one charged with the responsibility of inaugurating a health maintenance program mainly concerned with the problems of "preventive medicine."

In such a radical change in status, the industrial physician has recognized the necessity of consultation with specialists in those fields of medicine where most of his problems have led him. The surgeon, dermatologist, ophthalmologist, internist, roentgenologist, toxicologist, psychiatrist and doctors of public health have already been widely employed in helping to solve many of the difficulties arising in the formation of such programs. Until recently, the gynecologist and obstetrician have had little part in this development, and it is my purpose to discuss some of the problems of industrial medicine that are pertinent to this field of medical specialization.

Future employment policies, in many industries, will differ radically from those of the past mainly as a result of the excellent work done by the mass of women who have been clamoring at our factory gates for a chance to demonstrate their abilities in this emergency. True, most of them look upon their "war jobs" as temporary. However, many have found in their work a career they are determined to follow. It is obvious that they should be given this opportunity. Thus, more than ever, gynecological and obstetrical problems in industry must be accepted in a more permanent light than has been considered necessary heretofore.

The General Motors Corporation, with over 100 factories operating in 36 states, keeps an accurate record of employee absenteeism due to illness. During the six-months' period from last April through September, the disability rate for female employees was 292 per thousand. These statistics covered illnesses lasting longer than one week. Gynecological disease, including acute appendicitis, accounted for 26% of that total. Pregnancy caused an absenteeism rate of 45 per thousand during this same period.

Further statistical study brings out the fact that short-term sick absenteeism (one to seven days) is increasing more rapidly than disabilities lasting a longer period. This observation indicates that the factors which contribute to this are one of the most important causes of *all* lost time in industry.

These problems cannot be dismissed by stating that there are no widespread occupational diseases peculiar to women, nor that the high absenteeism rates of female employees are the result of their attempt at carrying on two jobs—the one in the factory, the other in maintaining the home.

The gynecological conditions most frequently brought to the attention of the industrial medical department and most commonly associated by the employee with her work are low back pain, dysmenorrhea, amenorrhea, excessive or inter-menstrual bleeding, pelvic pain and the aggravation of symptoms of the menopause and pelvic relaxations (cystocele, rectocele and prolapse of the uterus).

Further, and of sufficient importance to receive special attention, are the many phases of the all-important problem of pregnancy in the woman worker.

Many industrial physicians have recognized that attention to these gynecological complaints must become a part of their health maintenance program, and have outlined a definite approach towards a satisfactory solution.

Such a program is proving as important as the inclusion of aptitude tests and induction school training in an attempt to make proper placement at work a definite reality.

DR. BURNELL'S paper, together with DR. SAPPINGTON'S (p. 214) and DR. SMITH'S (p. 217), was read at a joint meeting of the Chicago Society of Industrial Medicine and Surgery and the Chicago Gynecological Society, January 21; wtih the discussion, which is omitted here, the three papers are appearing concurrently in *Am. J. Obst. & Gynec.*

### Pre-employment Gynecological Considerations

DURING the pre-employment physical examination, a knowledge of the previous health of the prospective employee is basic in evaluating the ability of that individual to do safely the job to which she has been assigned. It is of extreme importance to know whether there have been disabilities arising from dysmenorrhea, pelvic pain, repeated abortions, excessive menstrual flow or inter-menstrual bleeding, etc. It is just as basic that a pelvic examination should follow in the completion of such an evaluation.

X-ray of the chest, visual acuity tests, blood pressure readings, urine examinations and serological tests have become standard procedures in the pre-employment examination. Knowledge of any pathological state of the employee's pelvic organs is just as significant.

The importance of such knowledge becomes apparent when we study the trend of legislation relative to compensable occupational disease. Today, many of our state laws make little, if any, distinction between the liability of the employer in cases of disability arising directly out of employment, or such liability being the result of an aggravation of a pre-existing pathological state.

The prospective employee should be informed that the pre-employment examination is for the purpose of safe placement at work. It has been our experience that she readily accepts any examination that serves to protect her against disability or the aggravation of an already existing disease. Knowledge of past gynecological or obstetrical pathology, along with pelvic examination, is a fundamental inclusion in adequate health maintenance programs for the industrially employed female worker.

### Gynecological Problems of Established Employee

DEFINITE gynecological disease arising solely from an occupational cause is rare. Aggravation of a previously existing condition is common and gynecological symptoms that the employee attributes to her work are legion.

1. *Dysmenorrhea*:

The problem of dysmenorrhea is one that has caused the industrial physician much concern—concern often to the point of exasperation. His experience differs radically from that of the gynecologist in the approach to a solution of this problem.

First, he finds an attitude of resignation to this periodic disability which is amazing. Resignation to such a degree that it has rarely occurred to them to seek medical advice. In our series, less than 12% of those absenting themselves from one to three days each month, had ever requested an examination by their family physician.

Secondly, the discomfort of menstruation has previously furnished a large percentage of young women with an excuse to stay home from school or the avoidance of any unpleasant tasks. This attitude is carried into their factory environment where, with the mere mention of abdominal cramps, they expect to leave with no questions asked.

Lastly, "epidemic dysmenorrhea" may be unknown to the gynecologist, but it has frequently been observed by the industrial physician. The transfer of *one* young woman to a different type of employment when it was thought that the work she was doing was aggravating her symptoms, may bring many requests from other employees who seek similar changes, claiming similar disability.

What must the industrial physician include in his program of health maintenance that will tend to lessen the lost time from this source?

Wards should be provided in the industrial hospital where immediate relief can be obtained. The employee should *not* be sent home. Rest, local heat and simple medication soon return most of them to their work. However, it is during the inter-menstrual period that the most beneficial results can be obtained. A sincere attempt should be made to correct the mental attitude of the employee. Correction of improper posture at work, resulting in poor muscle tone, often necessitates change or rearrangement in her job. The importance of proper diet and the avoidance of constipation should be emphasized. Frequently, systematic exercises are outlined and outdoor activities encouraged.

By following such a program, one industrial institution employing over 9,000 women, reduced the lost time from dysmenorrhea approximately 65%.

The industrial physician is responsible for the correction of conditions within the factory which cause abnormal changes in the congestive states of the menstrual cycle. It is not always the female employee who is on her feet all day, moving about before her machine, nor the one who is required to use her feet constantly in the operation of her job, who complains of dysmenorrhea. The women on the assembly lines, inspectors or clerks, who sit at tables or desks, find that these more sedentary occupations similarly cause alterations in their menstrual symptoms.

It is the industrial physician who must decide whether the employee should be relieved of strenuous tasks; advised to seek systematic exercise, or receive instruction in the physiology of menstruation that might result in a change in mental attitude towards this too often misunderstood normal function.

His must be a practical approach to this subject, for his ultimate goal is, after all, a type of health maintenance that reduces absenteeism and lessens disruption in production from this or any other periodic or repeated disability.

Finally, the industrial physician must always keep in mind DR. HESSELTINE'S statement that "Dysmenorrhea is but a symptom resulting from many conditions (pelvic inflammatory states, endometriosis, pelvic neoplasm, cervical stenosis, hormonal imbalance, etc.) having nothing to do with the employment. Such cases can best be treated by the employee's own personal physician."

2. *Abnormal Menstrual Flow and Inter-menstrual Bleeding*:

The medical departments of our manufacturing institutions, functioning as "fact finding" agencies, have an unequalled opportunity for the recognition of early gynecological disease. Abnormal menstrual flow and inter-menstrual bleeding associated with ectopic pregnancy, threatened abortion, benign or malignant polyps, adenomyoma of the uterus, cervical cancer, etc., are frequently first observed in those departments. When it is recognized that there is no occupational explanation for these symptoms, the insistence upon prompt medical attention has resulted not only in shortening the period of disability, but frequently has saved the life of the employee.

The diagnosis of early pulmonary tuberculosis in those industrially employed has been a recognized factor in the reduction of the death rate from that source. In the case of cervical cancer, especially, a similar service may be rendered by the industrial physician.

3. *Pelvic Pain and Low Backache*:

These symptoms have been grouped together, for they are commonly associated in the minds of the female industrial worker. The industrial physician again finds himself in an unenviable position, for,

even when the employee knows that she has existing pathology, she only too frequently claims that her job is solely responsible for her symptoms.

A decision must be made at once. Is the basis for her complaint an inflammatory disease, cyst of the ovary, uterine fibroid, endometriosis, etc., or do these symptoms actually arise from lumbosacral strain, excessive fatigue, or bad posture at work? Pelvic examination is as essential, in these cases, as x-ray examination of the chest when pulmonary complications may be suspected.

4. *Pelvic Relaxations*:

With the increased employment of older parous women in our war industries, the problem of pelvic relaxations and their aggravation by certain types of work must be studied. Constant jarring, found in some riveting operations, heavy lifting, repeated uses of the foot in working certain power machines, or the requirement of standing long hours at a time, certainly aggravate the symptoms arising from cystocele, rectocele or a prolapsed uterus.

Actually these women should not be employed at this type of work. Transfer to lighter employment is one solution. When this is impossible, the industrial physician should see that these women be given sufficient rest periods to avoid excessive fatigue. Certainly it is his duty to examine the employee at frequent enough intervals to know whether her condition is becoming worse in spite of any change in occupation he may have insisted upon.

The male employee with hernia is given every attention. The problem of pelvic relaxation in the female must receive equal consideration.

5. *Menopause*:

The menopause, with its associated nervous and vasomotor instability, increased excitability and susceptibility to fatigue, along with frequent attacks of vertigo, limits the type of work that these female employees should be allowed to do.

It is the responsibility of the industrial physician to recognize menopausal symptoms, see that proper medical care is instituted by the employee's own physician, and insist that she be placed at tasks requiring less nervous energy and concentration. Sympathetic understanding on the part of the industrial physician goes far in lessening lost time during this trying period.

6. *Pregnancy*:

No phase of health maintenance for women in industry has received as much attention as that concerning pregnancy. The main problems involved are: should the employee continue at work once the diagnosis of pregnancy is established; under what circumstances should she be allowed to continue, and, if allowed to remain, what particular types of employment are safe, and what toxic exposures must be particularly guarded against.

State laws on this subject are few and inadequate. But four states (Massachusetts, Connecticut, Vermont and Missouri) legalize the length of time the pregnant employee may remain at work, while only six (Washington, Connecticut, Massachusetts, New York, Vermont and Missouri) specifically state when she may be legally returned to work following the birth of her baby.

The industrial physician receives little guidance from this source. For example, a woman may, legally at least, be kept at work in Massachusetts or Vermont until two weeks before the estimated date of delivery, while in Connecticut, New York or Massachusetts she may be employed four weeks post-partum, and in Missouri it is legal to place her at work in three weeks.

Fortunately, specific recommendations concerning pregnancy in the industrial female worker, have been prepared by the Children's Bureau, the Women's Bureau of the U. S. Department of Labor and the "Committee on Health of Women in Industry" of the American Medical Association. These recommendations have been of great assistance to the industrial physician in formulating policies adaptable to the particular type of industry he serves.

A summary of these recommendations follows:

1. The labor situation in this country does not necessitate the recruitment or employment of pregnant women.

2. The employee, upon realizing that she is pregnant, should be urged to report her condition immediately to the industrial medical department, the Girls' Counselor, or to the superintendent of her department, so that transfer to lighter or less fatiguing work may result.

3. There should be no exposures to toxic substances considered to be extra hazardous during pregnancy, such as analine, benzol, toluol, carbon disulphide, carbon monoxide, chlorinated hydrocarbons, lead, mercury, nitrobenzol, phosphorus, radioactive substances or any other toxic substances that exert an injurious effect upon the blood-forming organs, the liver, or the kidneys.

4. Facilities for adequate pre-natal medical care should be readily available for all employed pregnant women. They should be instructed as to the importance of such care and where it can be obtained. (Many industrial institutions require a note from the family physician stating that pre-natal care has been instituted before the employee is allowed to continue at work.)

5. Pregnant women should not be employed on a shift including the hours of 12:00 MIDNIGHT and 6:00 A.M. They should not be employed more than eight hours a day nor more than 48 hours per week; and it is desirable that their hours of work be limited to not more than 40 hours per week.

6. A minimum of six weeks' leave before delivery should be granted. (The word "minimum" should be emphasized, for in many occupations employment beyond the six-months' period is extremely hazardous.)

7. It is recommended that, in uncomplicated cases, a period of six weeks should follow delivery before the new mother should be returned to work. (Here again, that this is a "minimum" period should be given emphasis.)

It might be added that, where there is a previous history of repeated abortions, severe toxemias, existent pyelitis, kidney or heart disease, serious varicosities or sacro-iliac difficulties, the employee should be placed on a medical leave of absence and the industrial physician should furnish the obstetrician with any data he may have accumulated concerning this individual—such as reports of urine analyses, blood pressure readings, blood tests, x-ray findings, etc.

As the disability rates for premature termination of pregnancy are rising, closer cooperation between the industrial physician and the obstetrician is mandatory.

## Conclusion

THE industrial physician's consideration of gynecological and obstetrical problems is but a part of his health maintenance program. His ultimate objective is safe placement at work, the reduction of sick absenteeism, and the correction of working conditions that may result in disability or aggravation of an existing disease.

Pre-employment examinations of female employees must be thorough.

Consultation with those trained in the fields of gynecology and obstetrics must become as common a procedure as has heretofore been the case with the other specialized fields of medical practice.

His health maintenance program affords him an unequalled opportunity to observe the onset of disease. Early diagnoses of pulmonary tuberculosis, cardio-renal disease, syphilis, gastric or duodenal ulcer, appendicitis, etc., have resulted in much shorter periods of disability following his insistence upon prompt and adequate medical care.

A similar opportunity for service in the fields of gynecology and obstetrics must now be accepted as an added responsibility.

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## Health Problems of Women in Industry

*—Selected Summary of Plant-to-Plant Study Sponsored by the Industrial Hygiene Foundation of America, Inc., Pittsburgh—*

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THE INDUSTRIAL employment of women in increasingly large numbers in the recent past has focused sharp attention upon certain problems—some real, and others highly theoretical and speculative—with which medical, management, safety and industrial relations personnel are naturally concerned.

It was the purpose of this Foundation-supported plant-to-plant study, in interviewing physicians, safety directors, industrial hygiene engineers, nurses, women counselors, personnel directors, and employees, and observing working conditions, to find out just what the "woman problem" actually was in industry under wartime conditions.

It is impossible in this selective summary adequately to present all the facts and observations obtained—for details reference must be made to the text of the whole report published as a brochure by the Foundation. However, the basic data with respect to the number of plants visited, the number of employees, and other similar information can be presented, with some of the results. For obvious military reasons, it will not be possible to identify either by name or location the various plants and officials connected with them who so graciously cooperated in the study, nor is it possible to describe operations or processes.

### Basic Data of the Survey

THERE were 54 plants visited, the total population being 452,000 persons, of whom 131,000 were women; these plants were visited over a six-months' period; 10,000 miles were traveled.

The individual plants varied in population from 320 to 25,000, the common range being 2000 to 10,000.

The establishments were located in towns varying from 15,000 population to several million, in 14 industrially developed areas, in 10 different states, in the east, southeast and midwest.

The selection of the different types of manufacturing was as variable as it was possible to make it under wartime conditions, including the following: aircraft—tanks—munitions—small arms—machine guns—small and large electrical devices—radio—communication apparatus—steel and other heavy industries—ships—chemicals.

The general scope of the survey may be summarized under the following headings:

1. Type of physical examination.
2. Pelvic examinations.
3. Placement provisions, medical and personnel.
4. Use of women physicians, counselors, safety directors.
5. Dysmenorrhea, pregnancy, and menopause.
6. Health maintenance facilities (including periodic re-examinations, supervision and correction of physical defects, and dispensary service).
7. Posture.
8. Nutrition.
9. Health education.
10. Dermatoses.
11. Certification by family physicians.
12. Induction and supervision.
13. Absenteeism.
14. Shifts, hours and wages.
15. Transportation.
16. Lockers and rest rooms.
17. Rest periods and fatigue.
18. Weight lifting.
19. Personal equipment (including clothing and protective devices).
20. Accidental injuries.
21. Married women with young children.

The percentage of women employed is an important consideration and can be summarized in the following statements:

| | |
|---|---|
| Average for all plants | 29% |
| Low (plant of 10,000—2 yrs. old) | 0.6% |
| High (plant of 320—50 yrs. old) | 77% |
| Median | 39% |

The age grouping of women hired during 1942 and 1943 may serve as a basis for the theoretical expectancy of different types of problems. The following figures were available in a group of plants employing 25,000 women, and show the figures on a group of approximately 3000 women employed as noted:

AGE GROUPING OF WOMEN HIRED 1942-43

| Year | Under 20 | 20-29 | 30-39 | 40-49 | Total |
|---|---|---|---|---|---|
| 1942 | 276 | 827 | 94 | 11 | 1209 |
| 1943 | 448 | 1114 | 167 | 79 | 1843 |
| 1942 | 9.1% | 27.0% | 3.1% | 0.4% | 39.6% |
| 1943 | 14.7% | 36.6% | 5.5% | 2.6% | 60.4% |
| 1942-43 | 24.7% | 63.5% | 6.9% | 2.9% | 100% |

NOTE: Figures only for the first seven months of 1943. Only 36 women hired aged 50 and over.

It is believed that this age grouping applies to the majority of plants visited in this survey, over the period noted. The figures show an increase from 39.6% to 60.4% in the hiring of women in 1942 as compared with 1943, although figures for only the first seven months of 1943 are shown. Moreover, the figures show, over the period of 19 months, that 88% of the women hired were under age 30, and that only 36 women were hired age 50 or over. This gives some idea of the problems to be encountered because of the predominance of the younger age groups, although more older women may eventually be employed, varying directly with the prolongation of the war.

### Summary of Certain Results

CERTAIN results will receive comment here, but to understand the whole survey reference should be made to the text of the full report published by the Industrial Hygiene Foundation. Some of the physiological problems of women, as well as others, are perhaps of more general interest and therefore the

subjects of dysmenorrhea, pregnancy, menopause, pelvic examinations, the problem of married women with young children, methods of induction and supervision, have been selected as subjects for brief discussion.

DYSMENORRHEA:

Most of the plants included in this survey found that dysmenorrhea was not a significant problem—in fact, the majority of plants kept no figures on the incidence of this physiological disturbance. As a rule, the use of mild sedatives, hot drinks, hot water bottle to the abdomen and bed rest for a short period were efficacious to the extent that few experienced sufficient difficulty to be sent home or referred to outside physicians.

It was possible to obtain some figures on the occurrence of dysmenorrhea in certain establishments; one organization with approximately 3000 women showed an incidence of 176 cases per month, or an average of 39 cases per 1000 women employees; in another well-supervised medical department, serving approximately 1500 women employees, 8.4% of the complaints of women were for dysmenorrhea, indicating that one out of every 12 female complaints was for this cause. These figures might well be compared with those of a Boston public utility which showed, in an absenteeism survey during 1918-22, inclusive, that the rate was 32 per 100 women employees. It seems, therefore, that the two experiences quoted above from this survey were considerably lower than those obtained two decades ago, although it must be explained that the public utility involved had a benefit plan which started on the first day of illness; moreover, the hygienic habits and the physical development of women have greatly improved, which probably contributes favorably to the apparent lowered incidence of dysmenorrhea.

In one establishment most of the women giving dysmenorrhea as a reason for absence were not found to be the same individuals who came to the dispensary with this complaint during working hours. Although not conclusive, this points out the possibility that a certain number of cases of dysmenorrhea may be an excuse rather than a frank cause for absence.

With respect to control of this condition, lost time from menstrual troubles has been decreased by 80% in one organization by the use of pre-menstrual treatments, supplemented by advisory letters to private physicians with respect to adjustment to the job and the effects of work; hormones were used for pre-menstrual therapy, and the usual methods of treatment after pain began.

Considerable difficulty was experienced in one plant where there was a large number of office workers, a great deal of lost time being experienced because of menstrual difficulties, although figures were not available. A large organization employing approximately 14,000 women showed an incidence averaging eight cases a day, a remarkably low figure.

PREGNANCY:

There was a great variation in policy with respect to pregnant women in different organizations, varying from a distinct aversion to the employment of pregnant women in any kind of job, to rather loose supervision, allowing women to work a considerable length of time during pregnancy.

The majority of plants did not hire pregnant women if they knew the applicant to be pregnant, and did not allow pregnant women to continue to be employed when pregnancy was evident. This was managed by granting leave of absence in most instances at six months, making provision for no loss of seniority or other privileges during leave. Return to work was permitted two to six months postpartum, depending upon arrangements for child care, whether the child was to be nursed by the mother, and other obvious considerations.

It became quite evident in this study that the employment of pregnant women was not entirely a medical question, but also one of domestic importance.

Wherever pregnant women were working, careful supervision was exercised as to the kind of work done, and they were protected to the fullest extent against potentially harmful exposures.

It was freely acknowledged by most persons interviewed that it was difficult to state when a woman was pregnant by the customary physical examination and, therefore, many women were employed in the early months of pregnancy, not admitting the fact when asked.

In a great many instances, the return of the young mother was determined entirely by the family physician or the obstetrician in charge.

With respect to legal provisions, the law in one state provided that the pregnant woman might work up to 30 days of expected childbirth, but this was not generally accepted by industry in this state but was varied conservatively by depending upon the opinion of the family physician and the plant physician.

Material reduction in the mortality of mothers and infants has been accomplished in a moderate-sized community where an endowed mother-and-father-craft series of classes were instrumental in making such reductions.

There were several plants in which young mothers have returned as early as five weeks postpartum on certification from the attending physician, and in such plants the return must be predicated upon the family physician's opinion—this latter provision agreeing with that of the plant employing the largest number of women of any group in the series, approximately 14,000.

MENOPAUSE:

This condition apparently presented no problem in most of the establishments visited, and this was to be expected because of the age grouping of the women employed, as previously noted in the table on age grouping. However, there is an increasing tendency to employ older women and, as more experience is available, the data will be more reliable.

No figures of incidence could be procured.

In the majority of instances noted, no neuropsychiatric effects had been experienced, barring an occasional case. One exception to this occurred in a small plant in a comparatively small town where there was some difficulty because of emotional disturbances or neuropsychiatric tendencies—the family physicians quite generally asked for leaves of absence for such cases.

As an example of control in a moderate-sized industrial city, where menopause seemed to be something of a problem because of the employment of an unusually high percentage of older women, such women were put on the day shift, referred to the family physician, and given advice by the plant medical department; although some time loss resulted from these difficulties, employment was well supervised, and the women were given sitting jobs and simple operations. The incidence has been approximately one to two cases a month causing lost time, with one frank psychiatric case developing.

In a metropolitan area, a very large organization employing a large number of women over a long period, menopause was thought to be something of a problem,

the main trouble arising out of mild psychological disturbances, such cases being referred to the private physicians; no figures were available on the small amount of lost time believed to be involved.

PELVIC EXAMINATIONS:

Most physicians did not do a pelvic examination on women applicants. There was considerable variation with respect to the policy of those groups which did make some pelvic examinations. An occasional medical department reserved the right to do pelvic examinations, particularly on multipara, or based upon menstrual or other history, and, in such instances, there had been no refusals; in one medical department, the director of which was previously a gynecologist, a very small number of pelvic examinations were done and the rest were referred. In another instance, although no pelvic examinations were done routinely, there was an occasional examination if there was no family doctor available.

Approximately half the plants referred cases to private physicians for pelvic examinations, when such were indicated.

One physician made examinations on all multipara and those women in heavy work. If there was any objection, the individual was sent to the family doctor; objections occurred in less than 0.5%. In an organization where women had been employed for over 25 years and the medical director is a specialist in gynecology, pelvic examinations were done on selected older women, especially those who were married, and occasionally on young women, some cases also being referred. A number of physicians did pelvic examinations only in rare instances, one only on request, another only in the case of accidents. Interestingly enough, in one establishment where there was a part-time woman physician no pelvic examinations were done at the medical department, but all were referred to outside practitioners as found expedient.

MARRIED WOMEN WITH YOUNG CHILDREN:

This type of employee offered the most frequent and most difficult problem occurring in this survey. The chief loss of time by women employees, so far as could be determined, was caused by their inability to carry the tremendous load of doing two jobs at the same time—one at home and the other in the factory. Complaints of employees, supervisors, management, physicians, and all types of personnel, were numerous from this cause, and the problem was common to most plants visited. It appeared also to be the chief reason for frank fatigue in women employees, because of lack of proper rest and recreation.

The common solution of this problem in most plants is not evident, but in certain areas the building of day nurseries has apparently been the best move as yet. However, most communities do not have these facilities or, apparently, have not developed them. Reliance on domestics and relatives has not been satisfactory. Labor turnover and absenteeism have greatly increased. If the problem becomes acute, materially affecting production, it may be necessary to restrict the employment of married women to those who have no children under 14 years of age, as has been done in Great Britain.

In some small plants in small communities, there seemed to be an "epidemic" of wanting to change jobs and also wanting the same shift on which the husband worked; the expression "nervous exhaustion" had frequently occurred in certifications by family physicians, for leave of absence or change of job. In one middle western group, a precision industry, inquiry concerning child care was routinely made a part of the application for employment; this organization expects to go into more detail with respect to the social service angles of this problem later on, particularly with regard to day nursery provisions and visiting nurse check-up.

Conversely, in another large organization in the same urban area, there was no limit to the employment of women with young children; this establishment, however, has an excellent visiting nursing service which checks on various employees without "policing" them.

A rather unusual experience was encountered in a group of heavy-industry plants where women apparently had more interest in their jobs than in most organizations—as expressed by one of the officials, the attitude of women workers in this group of plants is that the "homework can go hang." However, in the same plants there were husband-and-wife employees who desired the same shift; in this group of plants women employees were not found together in large numbers, but were somewhat separated, and there was, therefore, no chance, at least while on the job, to talk over their various troubles.

Young unmarried women and women with adult children apparently do not cause similar difficulties attributable to home responsibilities, although these women also contribute somewhat significantly to absenteeism, leave, and labor turnover—this because of sweethearts, sons, or husbands in the services, which occasions temporary or permanent separation from employment, as can be well understood.

INDUCTION AND SUPERVISION:

Personnel problems are always better controlled in plants where there is an adequate induction program and a well managed scheme of supervision—troubles increase in direct proportion to the lack of such activities.

In most plants, women were not used as supervisors in production, but, where they were found in such positions, men were preferred and, in some instances, women supervisors in production were being discontinued. This experience did not, however, apply to supervisors in personnel work, safety, medical departments, nursing, and allied activities; in fact, there was indicated a definite need for more women counselors, safety directors, and physicians.

There were excellent examples of good induction and training followed by adequate continuous supervision —in some instances, consisting of six weeks' instruction in certain types of occupations, tours through the plant, and lectures on safety, personnel relationships, use of tools, and the running and care of various machines.

There were a very few examples of men and women supervisors used simultaneously and successfully, with no apparent differences being noted in the quality of the work. The majority of officials stated that they preferred male supervisors, although an excellent woman counselor who had had long experience with women in industry believed that female supervisors in production could be successful, depending upon the individual.

In one large plant induction was accomplished through a safety school, the applicant pre-viewing the job and being interviewed by a foreman before physical examination was done. Although this took time, according to the official making the statement, it was worth it.

A typical induction program in one large eastern plant consisted of one hour and 45 minutes talk (on company time) regarding the nature of employment, the products of the company, and the obligations of employees, supplemented by slide-talkies; matrons

spoke to women privately; another talk was given on shop rules and unions, and the applicant was taken to her department and introduced to the foreman who instructed her on the job. A follow-up was instituted after 10 days, reviewing the shop safety rules, and then a discussion was scheduled, encouraging everyone to ask questions.

In most organizations where women have been employed for many years, there was to be found a thorough induction and orientation program—however, there was a notable exception to this. It was consistently true of heavy-industry groups where women are comparatively new and have only been employed in a range of approximately 8 to 10% up to the present time.

### Some Conclusions

BASED upon a statistically significant segment of the industrial population, covering a wide selection of war material manufactured in different geographical areas and variable sized communities, and plants, the following conclusions seem to be evident:

1. Employment of women has greatly increased and will probably continue to increase for the duration.
2. Recent figures indicate that the great majority of women already employed are under age 30; it is reasonable to expect an increase in the older ages.
3. Of the physiological problems of women, dysmenorrhea and menopause appeared to occasion no practical difficulties, with the exception of a few individuals; pregnancy was by far of the greatest significance, the most important phase being social adjustment to home responsibilities.
4. Industrial policies with respect to pregnant women and the making of pelvic examinations by the plant physician were variable, but were subject in most instances to the opinion of the family physician.
5. Married women with young children presented the most difficult and most frequently encountered problem in this survey. Some suggestions have been made which may be efficacious.
6. Good induction and adequate continuous supervision are the logical basis for the control of most personnel problems, especially so for many women who are new to industrial occupations. The more common use of women counselors, safety directors, and physicians will assist tremendously in securing better employee-employer relationships.
7. Women will continue to be used in greater numbers in industry, both in war and in peace; and to demonstrate their value in spite of some natural obstacles to their consistently smooth absorption by industry in general—which obstacles are not insurmountable. Management and professional staffs will do well to continue to find ways and means of efficiently using the valuable services of women applicants and employees.

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## Causes of Sickness Absenteeism

*—Peculiar to Women in Industry—*

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THERE has been much interest shown since the onset of World War II in the so-called problem of female disorders among women employed in industry. This has, no doubt, been due to the necessity of placing women on jobs formerly filled by men, the necessity of speeding up production to meet manufacturing schedules, and the necessity of working hours in excess of what we have heretofore considered normal for women. With the man-power shortage caused by the demands of the armed services, industry has called upon women to take men's jobs on the industrial front.

We have employed women for light shop assembly and office work for more than three decades and, like other industries, in the present emergency we have placed some women on heavier and more disagreeable jobs heretofore considered entirely men's work. This situation gives rise to several questions. Can they do the job formerly performed by men? In most instances they can. At times, the rate of production and the quality of work increase when women assume these tasks that were formerly believed to be only men's jobs. Do they have a higher rate of absenteeism, and, if they do, is it because they are women? Is it because they have a uterus, ovaries, menstrual cycles, a menopause, etc.? Will this heavier work harm them; especially will it harm their female organs?

We, as physicians, have often been called upon to answer these questions. In most cases, we had to give an opinion that was based on our experience and judgment, since there has been little reliable scientific data to which we could refer. Unfortunately, however, in some instances, industrial physicians, and in many instances non-industrial physicians, have either overestimated the physical requirements of most industrial work women have been called upon to do, or underestimated women's physical capacity to do the work, for we have heard some strong statements of the probable bad effects of industrial work on women.

In our own experience we have, in general laid down no hard and fast rules about which jobs could be done by women. We have set no definite specific weight limit for women but rather have attempted to evaluate the physical requirements of the job and the physical capability of the woman in each case.

In general, women have had three absences to each absence for men. In general, women lose three days for every two days men are absent. This shows there is a difference in rate of absenteeism and in time lost. Is this difference due to female disorders?

A perspective of the frequency of female disorders as a cause of absence can be seen by comparing this classification of disorders with other major classifications of diseases occurring among our women in 1942.

TABLE I.
MAJOR CAUSES OF SICKNESS ABSENCES AMONG WOMEN EMPLOYEES IN 1942

| | Number of Cases Per 1000 Emp. | Percent of All Cases | Number of Calendar Days Lost Per 1000 Emp. | Percent of Total Days Lost |
|---|---|---|---|---|
| Respiratory diseases | 982.1 | 57.1 | 3650 | 41.3 |
| Digestive diseases | 383.8 | 22.3 | 1877 | 21.2 |
| Female diseases, non-malignant tumors and cysts of female organs | 88.3 | 5.1 | 586 | 6.6 |
| All other causes | 265.2 | 15.5 | 2722 | 30.9 |
| Total | 1719.4 | 100.0 | 8835 | 100.0 |

Significantly, this table reveals that while female disorders rank third as a cause of absences and time lost, they accounted for only 5.1% of the cases and only 6.6% of the total time lost. Each 1000 women lost 586 days because of female disorders, or, based on an eight-hour standard working day, each woman lost an average of 4 hours 41 minutes a year because of female disorders.

While the proportion of cases and time lost because of female diseases, as compared to other causes, is

relatively small, menstrual disorders are a factor which, although not always disabling, in many cases do reduce the efficiency of some women during their periods of menstruation. The following table gives the experience of our company hospital with cases of menstrual disorders from June through November, 1943. (The vast majority of these cases were dysmenorrhea.)

TABLE II.
CASES OF MENSTRUAL DISORDERS
COMING TO COMPANY HOSPITAL BECAUSE OF ILLNESS
FROM JUNE THROUGH NOVEMBER, 1943

| | Number of Cases | Percent of All Women | Percent of All Cases | Percent of Menstrual Disorders |
|---|---|---|---|---|
| Number of women in hospital for all causes | 6827 | 50.0 | 100.0 | |
| Number of menstrual disorder cases | 956 | 7.0 | 14.0 | 100.0 |
| Number of menstrual disorder cases able to work | 762 | 5.6 | 11.2 | 79.7 |
| Number of menstrual disorder cases sent home | 194 | 1.4 | 2.8 | 20.3 |

The significant observations that can be perceived from the above table are that 14% of all the cases seeking medical attention among our female working population came to our hospital because of menstrual disorders. (All of these cases were given symptomatic treatment and instructed to see their family physicians for advice.) Of this group, 80% recovered sufficiently to be allowed to return to work, while 20% were unable to work and were instructed to see their physicians at any early date. If we could expect the same statistical ratio to exist if this survey were carried out for an entire year, we could expect to send home 28 cases a year because of menstrual disorders for each 1000 female population.

Of the 88.3 cases of female diseases per 1000 population (as shown in the first column of Table I), 5.8 were due to non-malignant tumors and cysts of the female organs, and 82.5 per thousand were due to all other female diseases (including menstrual disorders, menopause, malignancies, etc.). The larger group was not broken down statistically.

The distribution by site of non-malignant tumors and cysts of the female organs was as follows:

TABLE III.
DISTRIBUTION OF NON-MALIGNANT
TUMORS AND CYSTS BY SITE

| Ovarian | Uterine | Other | Total Percent |
|---|---|---|---|
| 43.9 | 26.8 | 29.3 | 100.0 |

A study of Table III shows that approximately half of the abnormalities were located in the ovaries, while the remaining 50% were almost equally divided between the uterus and other parts of the genitals. If all absences and time lost because of female disorders were separated by shop and office women, some interesting observations can be made.

TABLE IV.
DISTRIBUTION OF FEMALE DISORDERS
BY SHOP AND OFFICE WOMEN

| | Shop Women | | Office Women | |
|---|---|---|---|---|
| | Cases Per 1000 Emp. | Calendar Days Per 1000 Emp. | Cases Per 1000 Emp. | Calendar Days Per 1000 Emp. |
| Female Diseases | 87.4 | 466.3 | 53.4 | 478.7 |
| Non-Malignant Tumors and Cysts | 4.1 | 159.2 | 10.8 | 430.6 |

A study of the statistics in Table IV shows a significant difference in the frequency of female diseases between shop women and office women, the former exceeding the latter by 34.0 cases per 1000 employees. In time lost, however, office women exceed the shop women by 12.4 days per capita. This difference is hardly great enough to be significant, but it does indicate that while office women are not absent as frequently because of female disorders as shop women, their cases last longer when they are absent. With non-malignant tumors and cysts, the office women have a higher incidence of both cases and days lost than the shop women.

These observed differences are interesting. The question immediately arises as to whether these differences are due to the type of work performed by the two groups or to some other factor or factors. It is often possible for a clever statistician to give statistics several and at times opposite meanings. Therefore, we hesitate making a definite interpretation of these figures. Nevertheless, a study in case material suggests that the differences in the above figures are not due to a dissimilarity in type of work but rather a difference in knowledge and understanding of female physiology. In the first place, our office women, in most cases, are selected on the basis of intelligence and education, while our shop women are selected because of manual skill and dexterity. On the job, the great majority of our office women work with the technical and professionally trained people and avail themselves of many and varied fields such as first-aid, home nursing, and other sources of such information, a situation we do not find to any extent among shop women.

This seems to indicate, therefore, that the lower frequency of female disorders among office women is due, at least in part, to the fact that they are more inclined to seek treatment for female difficulties than are the shop women while symptoms are still non-disabling. The shop women, on the other hand, are more imbued with superstitions and "old wives' tales" concerning female disorders, and have that fatalistic attitude toward female disorders which they often express as "women's burden." Thus, they may not seek professional help until their symptoms cause absenteeism.

Although the shop women have more absences because of the larger inclusive group of female diseases, they lost fewer calendar days. We believe economics was a factor which prompted the shop women to return to work at an earlier date. The higher incidence of both cases and days lost in the office women because of non-malignant tumors and cysts is probably due to the fact that more office women seek professional advice for these conditions and thus eventually more of these cases come to surgery. Should this be true, we would expect that the incidence of malignancy in office women would be smaller because they have more of their tumors operated in their incipiency. Another possible factor in accounting for the above differences in statistics is that office women are probably more specialist-minded, receiving better care for the larger group of female diseases and thus have fewer cases of absenteeism in this group, and have a higher rate of recognition of their earlier non-malignant tumors and cysts, which might account for the higher surgical absenteeism rate in this group.

All of the foregoing suggests that an educational program reaching all groups of women and general practitioners would be of value. Only too often when women report to our hospital with dysmenorrhea and we ask the stock question, "Of course you have seen your doctor for this trouble?" we received the stock answer, "Yes, he told me that when I got married and had a baby, all of my trouble would be gone. He did not examine me."

If the statistics on cases of the two groups are

further broken down according to age groups, other interesting facts appear.

TABLE V.
DISTRIBUTION OF FEMALE DISEASES BY AGE
CASES PER 1000 EMPLOYEES

| Age | −20 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50+ |
|---|---|---|---|---|---|---|---|---|
| Shop Women | 76.3 | 92.8 | 101.8 | 97.0 | 47.8 | 46.9 | 102.7 | 39.6 |
| Office Women | 82.9 | 70.0 | 55.8 | 45.6 | 36.2 | 60.9 | 9.8 | 11.9 |
| Calendar Days Lost Per 1000 Employees | | | | | | | | |
| Shop Women | 199 | 323 | 509 | 695 | 413 | 461 | 2192 | 198 |
| Office Women | 146 | 555 | 995 | 502 | 395 | 500 | 265 | 36 |

In general (excepting the under 20-year bracket), younger office women had fewer absences than the younger shop women, and the younger office women lost more days than the younger shop women. At 40 years, there is a significant increase in rate among the office women. The increase probably is due to absences because of menopausal difficulties. It is interesting to note that a similar increase occurs among shop women five years later.

The distribution of non-malignant tumors and cysts among office and shop women according to age was not significant because of the low statistical sample in many of the age brackets.

IN CONCLUSION, we may summarize our findings, based upon the preceding data, as follows:

1. Absences and time lost on account of female disorders have not reached an alarming magnitude in our industrial situation, accounting for an average loss of 4 hours and 41 minutes per year for each woman employee.

2. For each 1000 women population, we can expect to send home 28 cases a year because of menstrual disorders.

3. Shop women have a higher frequency of absences because of female disorders than office women, but there is little difference in the rate of time lost between the two groups. Office women, on the other hand, have a higher rate of both absences and time lost because of non-malignant tumors and cysts of the female organs than do shop women.

4. Menopausal absences appear earlier among office women than among shop women.

5. Women in industry are apparently not particularly affected by female disorders.

6. An educational program reaching all women and all family physicians would be of value.

## Lead Exposure and Poisoning

*Review by*

C. O. SAPPINGTON, M.D., Dr.P.H.

OCCUPATIONAL LEAD EXPOSURE AND LEAD POISONING. Report of the Committee on Lead Poisoning of the Industrial Hygiene Section, American Public Health Association. Paper pamphlet; pp. 67; 6 x 9; Price $0.75. Published by the American Public Health Association, New York City, 1943.

THIS is the most excellent summary on the above subject that has ever been issued. It covers the recognition of hazardous industrial lead exposure, including occurrence, recognition and measurement of occupational lead exposures, as well as types of exposure, and methods of measurement; same limits of occupational lead exposure as defined by air analyses, by results of analyses on the excreta and blood of workmen, signs of impending lead intoxication, individual susceptibility, and dietary and therapeutic prophylaxis; the control of occupational lead exposures, including medical supervision and engineering control in lead trades; occupational lead poisoning, diagnosis, medical history, physical examination, laboratory data, and clinical types of poisoning, differential diagnosis, the problem of associated disease, and the course and sequelae of lead poisoning; and, finally, the management and treatment of lead poisoning.

The appendix contains an excellent classified bibliography which, as stated, "is not intended to be all-inclusive, but is believed to be sufficiently informative." Moreover, the bibliography is divided up into different sections, which is helpful for ready reference.

Of particular interest to the reviewer is the cogent statement under the general heading "Occupational Lead Poisoning" and under the subheading "The Diagnosis of Lead Poisoning":

"There is need at present for the application of sound principles of clinical medicine in the diagnosis, not only of lead poisoning, but of occupational diseases in general. The tendency to resort to short-cut and makeshift methods based on a few allegedly specific criteria, especially those of the laboratory (microscopic blood findings and the results of the analyses on the blood or urine in the case of lead), is not uncommon, and is responsible for many of the diagnostic errors made by industrial physicians. Equally troublesome as a cause of unnecessary friction between employer and employee, and the source of fruitless litigation, is the readiness of many physicians engaged in general practice to attribute any type of illness to the effects of exposure to some noxious substance, if such a substance enters into or is allegedly used in some manner in the occupation or place of employment of the patient. Many of the claims for compensation for lead poisoning that arise in this manner have wholly inadequate medical and factual support, and, therefore, are disputed. Some of the claimants are entitled to compensation for disability, and should have expeditious and adequate medical backing for their claims, as well as satisfactory medical care. These claims must often await further investigation before they can be granted, and too often the information required to determine the nature of the illness cannot be obtained, because it was not sought at the proper time. Other claims have no foundation, a diagnosis having been arrived at on the assumption that there was occupational exposure, without benefit of an inquiry which would have disproved the assumption, and without employment of the physical diagnostic methods that would have revealed the real cause of illness.

"The point of the foregoing remarks is that the diagnosis of industrial diseases, specifically of lead poisoning, can and should be arrived at by the exercise of the same care and skill that is commonly employed in dealing with other disease processes. There is nothing mysterious or clairvoyant in the diagnostic procedure. The only important difference between ordinary medical practice and that concerned with lead poisoning and many another industrial disease is that the physician is often called upon to substantiate his diagnosis in a court or compensation hearing. He must, therefore, in fairness to his patient and to society, avail himself of accepted methods of procedure, and base his diagnosis on facts rather than assumptions and arbitrary judgments. This makes no greater demand than should be made upon him in his practice in general, since it represents only the usual means by which the existence of one disease process is revealed and others are excluded. A somewhat greater penalty may be exacted, however, for haste or carelessness or lack of skill in dealing with cases that come to litigation, in that some degree of humiliation is likely to be visited upon the physician who is poorly prepared to support his diagnosis."

This brochure should be in the library of every industrial physician and every private practitioner who has any contact with alleged cases, or who is called upon to treat cases coming from lead industries.

The material in this summary fulfills such a great need that the reviewer has the hope that some day similar treatment of other subjects, such as silicosis, industrial dermatoses, benzol poisoning, carbon monoxide asphyxia, and others, may receive similar excellent exposition.

# Occupational and Non-Occupational Diseases

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EVERY employee in every peace-time industry in this country is entitled to a safe place in which to work.

At the start let us differentiate between illnesses to which the legal aspects of workmen's compensation may apply and those which really are in the group which can intelligently be classified as occupational. There is no hard and fast line, but occupational diseases have been defined as those which occur with characteristic frequency and regularity in occupations in which there is a specific hazard as the cause which operates to produce effects in the human body recognized clinically by the medical profession as pathological changes and effects produced by the specific occupational hazard or hazards involved. This definition sounds more like the theory of relativity than it actually is. You've heard, perhaps, of the student who was asked to define Einstein's theory of relativity and whose answer was that "First cousins should not marry." Well, some of the decisions of compensation boards and courts in regard to occupational diseases are no less asinine than the student's answer.

It is true that, according to the definition I have quoted, a disease may be occupational under one set of circumstances and non-occupational under another; e.g., typhoid fever might be occupational in a group of men whose job was the cleaning of sanitary sewers and non-occupational if it occurred even in epidemic form in a group of mechanics. In fact there are many pathological conditions normally not thought of as occupational for which you and I could imagine a set of causal occupational circumstances which could produce them. For fear that you might want to trip me up on that statement, I would call your attention to the fact that in the present war we seldom hear the term shell shock, and yet the bombs have been bigger and the devastation more complete. That it was present in the first world war, or at least was a name which we gave to a pathological condition which filled hospitals with hopeless folks, no one will deny. Those men were working at the occupation of being soldiers.

But all this is quibbling. We have been able to reduce and in some instances almost make extinct many of the occupational and non-occupational diseases for which we could find a cause; therefore, let us start with etiology. The causes of the usually labeled occupational diseases can be listed under very few headings: thermal, mechanical, chemical, radioactive, parasitic and bacterial, atmospheric and electrical. In many instances these overlap or exist in combination: *Thermal*: Frostbite, burns, heat stroke, or heat exhaustion, etc. *Mechanical*: Oil dermatitis by plugging the pores of the skin, etc. *Radioactive*: X-rays, sunburn, etc. *Chemical*: Silicosis, lead, etc. *Electrical*: Flash, producing if untreated immediately a severe conjunctivitis with excruciating pain, etc. *Parasitic or bacterial*: Anthrax, tetanus, etc. *Atmospheric*: Caisson disease. High temperature with high humidity produces fatigue, etc.

It does not necessarily follow that, because a hazard exists, the disease or diseases which may result from that hazard will be produced in any one or all of the employees exposed. The amount and length of exposure are very important factors. Nothing irks me quite as much as to have a physician who knows nothing of the working conditions of his patients except that they work at a chemical plant, state to the employee or actually write on an insurance blank, "occupational poisoning," when there is no basis for such a statement. I'll grant that we of the human race are prone to reason backward from an actual result. We look for a cause for things that occur, and we physicians frequently take a possible etiological factor and make it an actual one.

Recently, I was guilty of the very offense for which I criticize other people. I was called to the plant to care for a man who was suffering severe pain in his right hip. There was no history of an injury, and I could not account for the pain he seemed to have. Not wishing to give him a hypo and thus mask symptoms which might assist his family physician in arriving at a diagnosis, I loaded him into my car and took him home. I assisted him into bed and, in stripping off his clothes, I noticed the beginning of a herpes zoster on the back of his right thigh, and I had my diagnosis —the prodromal pain of that condition. His family physician agreed with me; but the man did not improve and later I took some x-rays and found a definite necrosis of the fourth lumbar vertebra.

The most frequent mistake along this line is to lay our troubles and those of our patients to something we or they "et." You've perhaps heard the story Will Rogers told during the depression years before the New Deal solved all our troubles. He was criticized because he used the word "et." He admitted it and then added, "I have heard people say, 'I have eaten,' and they hadn't et." As we eat three times a day when we are flush with ration points, it does not take a long memory to go back and pick out something to which we can lay our troubles when possibly we played poker too late the night before in a smoke-fogged room.

Perhaps I am giving too much emphasis to this point, but if you are interested in industrial medicine and ever have worked or intend to work in an industry that has a restaurant or cafeteria, you've had or will have the pleasure of listening to tales of woe from three or more patients with indigestion who happened to eat a common article of food at the same meal. Without doubt, from three to six hundred other people ate the same food with no untoward results. Such instances are always worthy of investigation, but a little cerebration will rule them out as etiological factors.

Food poisoning does occur, and in company restaurants. I recall one such instance less than a year ago, and one of the industrial physicians of that plant said that if he ever had the chance to draw plans for another industrial medical department he would put in it a small but complete toilet for every employee on the roll. There was another instance given considerable publicity about a year ago of plant restaurant poisoning and, when the smoke cleared away and the facts were obtained, it boiled down to a large number of cases of heat exhaustion due to a lack of salt. Any industrial physician who does not know the value of salt in the prevention of heat exhaustion, after all the publicity that DR. SHOUDY'S work has been given, is not worthy of the name.

I'VE DIGRESSED somewhat from the standard outline of etiology which I gave you at the beginning, but I did it purposely. I am not going to bore you with lists of the various toxic dusts, vapors, volatile solvents and skin irritants, and the allowable parts per million. They are all in the textbooks, and volumes have been written about them. I do not remember them any-

The text of DR. SCHRAM'S Lecture at the Post-Graduate Course in Industrial Medicine, Long Island College of Medicine, November 3, 1943.

way. They are legion and, like the national debt, they are growing by leaps and bounds.

I work in a chemical plant, but what I know about chemistry is illustrated by the story of the time when Yale University needed a first baseman. It was in the period when certain men attended college during the athletic seasons only. The story goes that the New Haven coach went down to New York and hired a first baseman. He had to matriculate in one subject taught at Yale, and he had also to pass an examination in that subject, and this first baseman picked Chemistry. The undergraduate body, who were interested in the baseball team—having seen the man in action on the diamond and having heard him talk—were solidly of the opinion that he was a first baseman but that he did not click as a chemist. They had hoped that he would pick Bible, or Art, or some subject in which generalities might be accepted as knowledge. But he was declared eligible to play, and some of the doubting Thomases went to the Chemistry professor and asked, "Is this chap a chemist?" "No," the professor replied, "I would not call him a chemist, but he only had to pass 50%. I asked him two questions. What color is blue vitriol? He said it was pink—that was wrong. Then I asked him if he knew how to make sulphuric acid and he said, 'No,' and that was right."

You have on your program, for a lecture in a few days, a man who, I believe, knows more industrial chemistry and toxicology than any other man in the country, and he does not even pretend to know the entire list of substances that can do damage. But he knows where to find out. I also know—I go to him.

I am acquainted with a physician who makes diagnoses on a percentage basis, and he does good work. There are four causes for ascites in the human, and "bing," "bing," "bing," and "bing," he has the answer as to the cause in the case of the patient before him, and generally he's right. But the trouble is that he closes his mind when he makes the fourth "bing." Don't do that with occupational diseases.

Seven years ago, my associate and I drove in our two cars over 100 miles on a Sunday to see and prescribe for 30 men who showed the classical symptoms of mercurial poisoning. They all worked in a repair crew which had the job of taking off, with cutting torches, the tops of some large tanks and substituting a new water-sealing device for one that formerly held mercury. The mercury had all been scrupulously removed, and at first we could not account for the chain of symptoms. But this had happened: in refilling the old seals occasionally some mercury would spill, and it would immediately form itself into a small drop and roll off the dome-shaped top of the tank. The tanks were frequently repainted, but mercury is an active element, and it sublimates and attaches itself to other elements. With a knife blade, we were able to demonstrate, underneath and between the layers of paint, traces of mercury. Plenty of ventilation had been provided and, as it was a difficult and tedious task, the men had worked in short shifts of about 30 minutes each, but the exposure was enough to cause trouble. All of the men recovered after a few days, and only a few lost time, but three of them had to be hospitalized. An unusual instance—yes, but it was one that would not fit a percentage table. Reasonable precautions had been taken. The superintendent of the department and the foreman of the crew doing the work were absolutely positive that there was no mercury within a mile of that building. The job was finished with the men working in oxygen helmets. There has to be a cause-and-effect relationship.

The chap who helped me out most in occupational disease is the one who thought out the triad in occupational dermatoses. Contact with a certain substance produces it; removal of the contact clears it up, and recontact reproduces it. When you have that sort of evidence to pin your diagnosis on, you're on the right road, and generally you've just one turn to make—recommend transfer.

There are other factors to take into consideration, and I've no time to spend telling you about curative treatment. But sometimes you can save a valued employee to a department even though he has a type of dermatitis. I refer to the furuncles often seen in men who work in cutting compounds, and to the oil dermatitis of mechanics. The first step is to talk to the men individually as to personal cleanliness. I do not mean to infer that the employees of our shops are dirty. They probably take more baths than I do. But with either of these conditions they must lean over backward in getting clean. They should be told (I am referring here to the employees who have one of these forms of dermatitis) to scrub and scrub again—make their skin glow. They must be told to wear clean clothes—clean underwear—every day, and never to use a wiping rag that has been used by someone else. The store room frequently gets tight with clean wiping rags. These cloths are good for washing the family car, and are carried home, and right now they are hard to get; but many, many times I have gone to the head of the stores department, explained the situation, and secured his cooperation in helping me clean up an epidemic of boils by doling out clean wiping rags every time a man with a bandage on asked for one. I believe in keeping all furuncles covered. The bacteria which produce them could hold a dress parade four abreast down alongside of a hair follicle, and, while there is such a thing as a hematogenous spreading of furuncles, yet I believe that mostly they are spread by the finger nails in subconscious scratching.

I ALSO wish to call your thoughts to a condition which came to my attention three years ago. I never had seen it before, and the older editions of Fuchs's Ophthalmology, the bible of the ophthalmologists, has one single sentence of a line and one-half in fine print in a foot-note stating that quinone at times produced a tanning of the eye in the palpebral fissure. The newer editions which I've seen do not mention it, but I can show you 23 men who have it and four of these have a partial loss of vision. All of you have handled hydroquinone and, as you know, it is the material out of which we make our fixing solutions for films.

I am going to read to you a description written by Dr. Banks Anderson, of Duke University, of one of the eyes in this group. This man probably had the least contact, but was susceptible to the effects of quinone: "Ophthalmoscopic examination through widely dilated pupils reveals no pathology of the vitreous, disc, macula, or the peripheral fundus of either eye. There are no areas of exudate, hemorrhage or pigmentation which would suggest any deterioration, or inflammatory reaction of the posterior segments. The principal features of this individual's pathological picture are found by the slit-lamp examination. Examination reveals identical lesions in each eye, so that only one will be described. The conjunctiva is injected, particularly about the limbus. The brown walnut stain described in the correspondence cannot be seen grossly in this patient, but under the slit-lamp in the conjunctiva, particularly about the limbus, in the left eye may be seen fine discrete areas in which a granular pigment appears to be embedded. These pigment spots have very much the same appearance

as melanin granules noted in the negro race except that they appear more superficially situated in the conjunctiva. Also in the superficial layers of the conjunctiva on both the temporal and palpebral sides are fine glass-like spheres. These are situated mostly over the vessel's walls and have apparently about the same diameter as the superficial conjunctival vessels, which are slightly engorged. In the superficial layers of the cornea, apparently just under or above Bowman's membrane are many fine grayish, translucent and highly refractile spots. These spots give an irregularly silverly sheen to the entire cornea. The interstitial substance of each cornea appears to be clear. There are many fine vertical folds in Descemet's membrane. These folds are present on each side. The anterior chambers are of normal depth. The anterior lens capsule seems normal in each eye. I am of the opinion that some irregular faint vertical striation is present in the posterior lens capsule of the left eye. But Dr. Stocker does not confirm me in this impression. It is his feeling that the lenses are normal throughout."

I've said nothing so far about the non-occupational diseases, and I am not going to say anything about them. It is frequently difficult to decide which is which. There are comparatively few instances of occupational disease, and the reason is that industry has been on its toes in those states which have an occupational disease clause in their workmen's compensation law, and has set the pace for the rest of us. I think the figures are around 2% of the total claims. If we care to make a comparison of relative importance from the point of view of lost time, the occupational diseases fade into insignificance.

If the comparison is made on the basis of research with the idea of prevention, I can state, without fear of successful contradiction that, with the exception of cancer, much more has been done about occupational disease, and the results speak for themselves.

EARLIER in this discourse I said that I did not have time to talk about curative treatment, but I do have time to talk about preventive treatment. We have it for every occupational disease of which I know. With all the reverence that I possess, I can really say, "Thank God that this is so." In this preventive work, the industrial physician has only a small part to play, but I know of no more important part. The engineer, the hygienist, the men of the safety department, the nurses must work together, and it must be team work. It took time to sell the idea that the industrial physician should be in on plans for new buildings before they were finished. It took me five years to sell the idea that it was safe for men and women under treatment for syyphilis to work—they were working—but we did not take any blood tests and we did not know who they were. You can imagine how much longer it took to sell the idea that we could be constructively useful in drafting plans for safe employment.

There can be a laundry for clothes for employees whose safety demands that they have fresh complete changes daily. There can be a central cleaning place for goggles and gloves and, if necessary, they can be sterilized. There can be clean well-lighted and ventilated locker and shower rooms. There can be a hygiene laboratory, so that we may discover early diagnostic signs. There can be a medical department. AND I DO NOT MEAN FIRST AID. If doctors and nurses are doing first aid, let's toss them out and get some new faces.

Let's not belittle the work of medically trained men and nurses by calling their places of work first aid departments.

The employees of the place where you work are your clients. Go to bat for them at every opportunity you get. By so doing, you may be able to prevent a good many unfortunate situations, such as, for example, the condition in which I once saw an employee who worked in manganese. I shall never forget that man. His past history was somewhat as follows: A fine physique, seldom ill, a great family man, and a great reader. His children ran to meet him at night; one grabbed his dinner bucket—he carried one—and the others just hung on. It was a romp and a glorious time when daddy came home from work.

Within a comparatively short period all this changed, with the exception that he was still the picture of perfect health. His wife noticed that he did not read as much. Then there came the time when he walked through his group of children and didn't stop—apparently he didn't see them. His wife and children were afraid. Then he lost his job, and just sat. He had an absolutely blank expression. His upper lip did not move when he talked, and that talk was in a guttural monotone that was difficult to understand. He only talked when asked questions, and the questioner always repeated the question because he had to wait so long for an answer that he was sure that the patient had not heard. The man's senses of hearing, sight, taste, smell and touch were normal, but his reaction time was as noted above. He walked as though he were always going to fall over backward. A living hulk of a man who once lived gloriously and who now only existed. He realized his condition but had no power to do anything about it and, sadder still, he was past help from medical science.

The development of this occupational disease is most insidious and it takes eternal vigilance to be sure that no more will occur. But, men, it's worth it.

UNDERNEATH the floor of the human skull and well in from the laterial surfaces, there are two small bony boxes. In these boxes, 3 x 5 mm., lie the most nearly perfect and most delicate of our sense organs. It is as though nature, having reached her peak in making something of which she was duly proud, had tucked it away where it could function in safety. I refer to the cochlea in which is located the nerve end-organ of hearing. There's the shelf or ramp dividing with its attached membranes the spiral cavern of this minute snail-shell like structure into three parts as it descends to the apex, for this tiny box is partially tipped bottom side up. Arranged along this shelf are small hair-like nerve filaments which make an interpretative mechanism, for a master organ and for all of the instruments of all the orchestras and vocalists of all time. To it have come the reverberations of the hollow-log messages of the savage. The tom-toms of the semi-civilized have galvanized hordes into action through it. The words of peace and salvation of the great preachers of the ages have found a receptive mechanism here. I do not know if it has been determined where on this masterpiece the high and low notes of our great musical compositions find reciprocal vibration and are relayed to the brain for interpretation. But I am aware that this piece of expert workmanship is subject to occupational damage, as is also the eye, which is not nearly as intricate and perfect but which has been accurately described as the window of the soul.

I know of no greater calling than that which gives you and me the privilege of keeping this body of ours —the temple not made with hands but created in the image of God—free from the effects of occupational disease.

## Chronic Carbon Disulfide Exposure

*—Effect on Thiamine Excretion—*

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EXPOSURE to vapors of industrial solvents with their effects on the central nervous system has led to the belief that thiamine deficiencies may result. Where such exposure is prolonged and the concentration levels are high this situation might conceivably prevail. Experimental investigation has pointed in that direction. But where systems of exhaust ventilation for the control of such hazards have been established and the concentration levels are within or near the permissible limit such a result may not be expected.

Determination of thiamine deficiency by assay of the urine has been offered as a diagnostic test.[1] In workers who were exposed to various degrees of chronic carbon disulfide absorptions, Lewey[2] reported diminished thiamine excretion in 24-hour specimens of urine. He proffered the hypothesis that the mechanism of chronic $CS_2$ absorption is attributed to thiamine deficiency, possibly by way of a liver damage and by direct poisoning of the coenzymes of nerve metabolism and respiration. McKey et al,[3] in vitro manometric experiments, in which exposure concentrations approximated those of our own work, show that the systems which involve vitamin $B_1$ were not inhibited by carbon disulfide.

The objective was to examine the concentration levels of $CS_2$ exposure and to determine if an actual thiamine deficiency existed among those so exposed.

### Method

TWENTY-FOUR hour urine specimens were collected from workers in various parts of the plant who were exposed to $CS_2$ vapors. Two workers who were far removed from the operational areas were used as controls. Assays of thiamine in the urine were made by the thiochrome method. Checks of $CS_2$ in the air were made of the various plant areas in which each worker was located. All of the workers had been employed in their present jobs for one or more years.

DATA

| Worker | p.p.m. $CS_2$ Maximum Readings | Micrograms Thiamine in 24-hr. Specimens |
|---|---|---|
| 1 | 20 | 142.3 |
| 2 | 25 | 101.5 |
| 3 | 20 | 74.6 |
| 4 | 25 | 49.1 |
| 5 | 25 | 124.2 |
| 6 | 5 | 103.2 |
| 7 | 5 | 105.8 |
| 8 (control) | 0 | 123.3 |
| 9 (control) | 0 | 71.4 |

### Results

THE normal output of a healthy adult on an adequate diet is between 50 and 150 micrograms of thiamine per day. Only one worker showed a reading below the lower limit for normal, although the difference was so slight that it cannot be considered as subnormal.

The permissible limit of $CS_2$ in the breathing zone of workers is given as 10 parts per million. However, in short exposures this limit is raised to 20 parts per million. At the time of air sampling, the concentration levels were slightly above the upper limit for short exposures for workers 2, 4 and 5.

### Conclusion

EXPOSURE to low concentrations of $CS_2$ does not appear to cause a thiamine deficiency as determined by assay of the urine.

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## Industrial Dust — The Pneumoconioses

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THE RELATION between dust and certain diseases of the lungs has been recognized for centuries, but only in recent years has it been given the intensive study it deserves. In the fifth century B.C., Hippocrates noted symptoms in a metal digger, comparable to those observed among present-day miners suffering from silicosis. Since that time, other investigators have recorded their impressions and observations on the effects of inhaled dusts and have emphasized the association of these with tuberculosis. It was not until the latter part of the nineteenth century, however, that real interest in the subject was manifested.

To South Africa must be given the credit for the earliest serious contribution to our knowledge of the industrial dust hazard. Here, in 1902, physical examinations were made on 3000 rock drillers and for the first time, x-rays of the chest were used in a comprehensive study of 300 cases. Diagnostic standards of disease, safe limits of particle concentration in the air of working places, and engineering methods for dust control were instituted. From 1915 on, Great Britain, Germany, Australia, Italy, Canada, and the United States made further investigations, but the most noteworthy progress in these countries occurred during the last few years.

Kronenberg and Morse[1] have suggested the following classification of industrial dusts:

TABLE I.

| I. ORGANIC DUSTS: | II. INORGANIC DUSTS: |
|---|---|
| A. Non-Living: | A. Toxic and (or) Irritant. |
| 1. Toxic and (or) Irritant. | B. Fibrosis Producing. |
| B. Living: | C. Non-Fibrosis Producing. |
| 1. Bacteria. | |
| 2. Fungi. | |

Generally speaking, organic dusts originate from plants or animals, but many thousands of these substances are made synthetically. They may produce toxic or systemic effects, but usually their main consequence is local or irritant. They do not cause pulmonary fibrosis, but such things as dermatitis, dental lesions, irritations of the nasal mucous membranes, and conjunctivitis are fairly common in workers handling these materials. Digestive disturbances have been observed. Allergic symptoms may occur in those exposed to pollens, horse hair, furs and wool, and various types of wood dust are known to affect suscep-

The text of DR. HAMLIN'S Lecture at the Second Post-Graduate Course in Industrial Medicine, Long Island College of Medicine, Brooklyn, Friday, November 5, 1943.

tible persons. Bacteria such as the anthrax bacillus are capable of producing cutaneous lesions, or "wool sorters' disease," when inhaled. Sappington[2] has listed over 100 occupations which may produce exposure resulting in allergy, asthma, or irritation of the skin and upper air passages.

Fungi, such as mycelia and spores of molds, are apt to cause rashes and painful fissures of the skin, while cotton weavers develop a form of disease known as aspergillosis from inhaling spores of a mildew which occasionally occurs on threads.

The inorganic dusts which have significance in industry are derived mainly from minerals and metals. In the process of grinding, crushing, blasting and drilling these earthy substances, dust particles ranging in size from microscopic to visible are liberated and remain in suspension in the air for varying periods depending on their size and settling velocity. Inhalation of those particles which contain silica in the uncombined state produces the type of pulmonary fibrosis known as silicosis. Gardner[3] demonstrated the specific action of silica and made it clear that only silica in the "free" state is capable of causing this type of tissue reaction.

The toxic inorganic dusts are those of the heavy metals and their salts, such as lead, mercury, manganese, etc. They are usually considered under the heading of industrial poisons rather than of dusts.

IN DISCUSSING hazardous particles, the distinction between dust, fumes, smoke and mist is frequently overlooked. Drinker and Hatch[4] state that dust is formed by reducing earthy materials to small-sized portions, sub-microscopic to the visible, the composition of the particles being the same as that of the parent material. Common examples are the mineral dusts derived from the disintegration of rock and the organic dusts like wheat and flour.

Fumes are formed by processes like combustion, sublimation and condensation. The particle size is generally below 1 micron.

Smoke is generally of organic origin and is characterized by a particle size below 0.5 microns.

Mists or fogs are formed by the condensation of water vapor upon suitable nuclei. The particle or droplet size varies widely, depending on the condition prevailing.

The significance of these distinctions becomes apparent when evaluating the exposure in an individual manifesting signs or symptoms of pneumoconiosis. Since men working in dusty atmospheres are frequently exposed to a combination of these factors, the actual cause of fibrosis may be obscured, a fact which has considerable importance in cases involving litigation.

Like "rheumatism," the term "pneumoconiosis" covers a variety of conditions. It has been defined as a "chronic pulmonary fibrosis due to the inhalation of irritating dusts which produce a proliferative reaction" (Johnson[5]), or a condition due to "the effects upon the lungs of the inhalation of excessive quantities of dust, manifested by structural changes in the lung tissue and entirely distinct from the action of poisonous dust such as lead or mercury, in which case the lungs act merely as the point of entrance into the body without definite local influence" (Pancoast[6]). Perhaps the simplest way of stating it would be to say that the term refers to a condition of the lungs resulting from the prolonged inhalation of dust whether harmful or inert.

Pneumoconiosis includes such specific diseases as anthracosis, asbestosis, siderosis, silicosis, etc.

IN RECENT years few diseases have received more attention and publicity than those due to dust. The work of the United States Bureau of Mines in the Tri-State Lead and Zinc Mining districts (1924-1927) and the Metropolitan Life Insurance Company[7] directed attention to other industries where disabling pulmonary diseases were known to exist. Other investigations were made by the U. S. Public Health Service, and in 1933 Gardner and Cummings, of the Saranac Laboratory, began extensive studies in the iron ranges of Northern Michigan and Wisconsin. Since that time, many industries, here and abroad, have established clinics and laboratories for further research and control of the hazard.

The pathology of these diseases was definitely established by Dr. Leroy U. Gardner,[8] Director of the Saranac Laboratory, in 1934. He demonstrated the effects of various dusts on the lungs of laboratory animals and studied the part played by tuberculosis in the progress of the disease. The etiology, physical signs and symptoms, x-ray and laboratory findings were fully described and many other details of a technical nature determined. During this period also, concentration codes, representing "safe" limits of air borne dust, were recommended. These vary in different locations but, generally speaking, the following table, set up by the Committee on "Prevention of Silicosis Through Medical Control" of the National Silicosis Conference, offers a fair standard.

TABLE II.
PERMISSIBLE DUST CONCENTRATIONS IN VARIOUS INDUSTRIES

| Industry | Percentage Silica in the Dust | Permissible Dust Concentration millions per Cubic Foot |
|---|---|---|
| South Africa* | 80 | 4½ |
| Ontario Gold Mines* | about 35 (in the rock) | 8½ |
| Australia Sandstone* | 90 (in the rock) | 6 |
| Barre Granite* | 31 to 38 | 00 to 20 |
| Pennsylvania Anthracite Coal Mines** | 35 | 5 to 10 |
| | 13 | 10 to 15 |
| | 5 | 50 |
| Broken Hill, Australia* | 10 to 17 | 14 |

*Based upon engineering practice.
**Based upon clinical studies.

Of the dusts studied up to the present time, only silica and asbestos produce definite pulmonary fibrosis. All the other types of pneumoconiosis exhibit the same general kind of tissue change with a similar pattern of shadows on the roentgenogram. Gardner states that the pattern in this instance consists of a mere accentuation of the normal branching, tree-like shadows cast chiefly by the pulmonary blood vessels. It represents a simple benign type of linear fibrosis and is difficult to distinguish from the mild accentuation of linear markings sometimes seen in x-rays of individuals with no known history of dust exposure.

Various terms are used to indicate special types of pneumoconiosis. For instance, "anthracosis" designates a condition of the lungs found among coal miners due to the inhalation of coal dust. "Siderosis" describes the tissue reaction occurring in some iron ore miners, and such terms as "byssinosis," and "tobacosis" refer to the pulmonary changes resulting from exposure to dust from cotton and tobacco. While such distinctions do not add much to our knowledge of diseases due to dust, nevertheless it is desirable to have a general conception of the important physical and roentgenological features of each for the sake of diagnosis.

In this connection it is advisable to mention the status of the silicates. The term "silicatosis" has been used from time to time to describe changes observed in the chest x-ray of persons exposed to dust from

such substances as talc, soap stone, mica, feldspar, garnet, etc.; but the exact role played by these silicates in the production of pulmonary change has not yet been definitely established. They constitute a group of numerous minerals which find widespread use in industry, but with the exception of asbestos, their capacity to produce fibrosis has not been demonstrated. Petrologists warn against the potential hazard from silicates but experiments so far have produced no evidence of connective tissue proliferation as a result of their use. On the other hand, it should not be assumed that lack of such evidence indicates absolute inertness. The changes observed in the chest x-rays of persons exposed to silicate dust have been theoretically explained as a mild silicosis arising from silica left after the body fluids have leached the bases out of the silicotic molecule. A representative group of 24 silicates used in industry, listed by Gardner, appears in Lanza's book, "Silicosis and Asbestosis." The inert dusts, which include most of the silicates, are relatively unimportant because of their non-disabling character. A few of these materials are limestone, marble, talc, chalk, calcined magnesium for insulation, furnace linings, carbon dust, iron dust, tobacco dust, cement, cotton, molds, fungi, etc.

Anthraco-silicosis results from excessive exposure to coal dust which contains amounts of free silica. Since carbon is one of the inert dusts, it seems reasonable to assume that the fibrosis is simply the result of the action of free silica which is present in sufficient concentration to induce proliferative cell reaction. Because it occurs chiefly in hard coal miners, it has been known for many years as "miner's asthma."

The cardinal symptom is shortness of breath, frequently associated with productive cough. More advanced cases complain of weakness, chest pain, gastric disturbances and hemoptysis. Sayers[9] states that in a U. S. Public Health Survey of anthracite miners in Pennsylvania in 1933, fever and night sweats were seldom mentioned. (This is true of silicosis cases in iron ore miners.) He notes such physical signs as dyspnea, prolonged expiration, change in contour of the chest, decreased chest expansion, clubbing of the fingers, change in breath sounds, altered fremitus and impaired resonance. Where infection complicated the picture, the symptoms were more marked and included cyanosis and loss of weight and strength.

The pathology of anthraco-silicosis is characterized by accumulations of coal dust in the lungs associated with varying degrees of pulmonary fibrosis. The lungs are gray and firm and may show dark colored markings on the pleural surfaces. On section, areas of black pigmentation appear scattered throughout the lung fields. Coalescence of the nodules produces larger areas, particularly in the hilar regions, but many large discrete nodules appear throughout the parenchyma.

Fibrous hyperplasia can be seen along the lymphatics. Microscopic section reveals deeply pigmented areas of fibrous connective tissue with dust laden macrophages around the outer border of the nodule.

The earliest x-ray evidence of anthraco-silicosis consists of exaggeration of the linear markings which increases with continued exposure, until the general pattern is obscured and replaced by definite nodulation. Further progress of the disease will be evidenced by more massive conglomerate shadows which may be complicated by the presence of infection.

Asbestosis as an occupational disease has been recognized only in recent years. Forty-one deaths were reported from this cause in England up to 1934. In this country it has been estimated by Lanza that approximately 10,000 persons are exposed to asbestos dust. In a study by Dressen, Edwards and Miller[10] of the U. S. Public Health Service, 541 asbestos workers were examined. No cases of asbestosis were found among workers exposed to dust concentrations below 2,500,000 particles per cubic foot of air.

THE greatest occupational hazard exists in mining, handling and crushing crude asbestos, making insulation and the carding and weaving of asbestos. In other industries such as the compounding of materials for automobile brake linings, the hazard is recognized but the disease is uncommon.

Asbestos is a hydrated magnesium silicate. It is the one silicate which does produce a fibrosis, but this differs pathologically and roentgenologically from the nodular reaction of silica. Industrial asbestos dust is comprised of very small fibres. Only the larger ones, over 2 microns in length, are thought to be capable of producing fibrosis. Gardner[11] is of the opinion that inhaled asbestos fibres are irritating not because they are silicates, but because they are stiff fibres which mechanically irritate the lungs. When the fibres used in animal experiments were finely ground (under 2 microns), the irritating property of asbestos practically disappeared. Unlike the free silicas, these minerals will not stimulate fibroblasts in any part of the body other than the lungs. While the action of free silica is chemical, that of asbestos is mechanical. The typical lesions, observed microscopically, show large macrophages in the distal portions of the bronchial tree, the formation of the asbestos giant cell, and the generalized fibrosis surrounding the bronchioles, alveoli, air sacs and blood vessels. This results in obliteration of the lung structure. The alveoli have literally become plugged, and the function of the lung impaired mechanically.

Merewether and Price[12] examined 363 workers exposed to practically pure asbestos dust in factories in Great Britain. The following table indicates their findings as regards exposure and fibrosis.

TABLE III.

| Years at Work | Cases Examined | Showing Fibrosis | Per Cent |
|---|---|---|---|
| 0 to 4 | 89 | 0 | 0.0 |
| 5 to 9 | 141 | 36 | 25.5 |
| 10 to 14 | 84 | 27 | 32.1 |
| 15 to 19 | 28 | 15 | 53.6 |
| 20 and over | 21 | 17 | 90.9 |

As in cases of fibrosis produced by other dusts, there is no typical symptom of asbestosis. Dyspnea is the most striking feature of the disease. The onset is gradual, and the symptoms increase as the condition advances. Cough, expectoration, cyanosis, loss of weight, and emaciation are late occurrences probably associated with infection.

A feature of asbestosis is the occurrence of so-called asbestos bodies. Cook[13] states that "the 'curious bodies' so characteristic of pulmonary asbestosis are found in the alveoli and bronchioles and in the fibrous and necrotic areas. They measure 20 to 100 microns in length. One or both ends are bulbous, giving a clubbed or dumb-bell appearance. The shafts are either homogeneous or segmented crosswise. They are golden yellow to brownish in color. They do not stain but give a Prussian blue reaction to iron. From a diagnostic standpoint, it is generally agreed that the 'curious bodies' signify exposure to asbestos dust but cannot be depended upon for a diagnosis of asbestosis." Apparently the asbestos body is formed from the original fibre by a tissue reaction, the nature of which is still obscure. The fact that segmented figures are not found in crude asbestos or asbestos dust indicates that they

are formed only after the fibres have come in contact with living tissue.

Another interesting skin lesion found in this disease is the "asbestos corn" due to the penetration of fibres into the superficial layers of the skin.

To establish a diagnosis, a history of exposure to asbestos dust is essential. The length of this exposure is important and should be correlated with the chest roentgenogram in which the "ground glass appearance" is characteristic. The lesions are limited to the lower halves of the lungs and there is hyperventilation in the upper portions. The cardiac outline becomes blurred and the domes of the diaphragm obliterated. The appearance of the heart and lower chest may suggest cardiac disease which should be definitely ruled out in a worker in an asbestos plant before diagnosing his condition as asbestosis. The diagnosis of asbestosis from the x-ray is not an easy matter, but the following features are fairly characteristic:

1. Lesions basal in character.
2. Hyperventilation in upper lobes.
3. Blurred cardiac outline.
4. Obliteration of the diaphragm.
5. No nodulation.
6. "Ground glass" appearance.
7. May be unilateral.

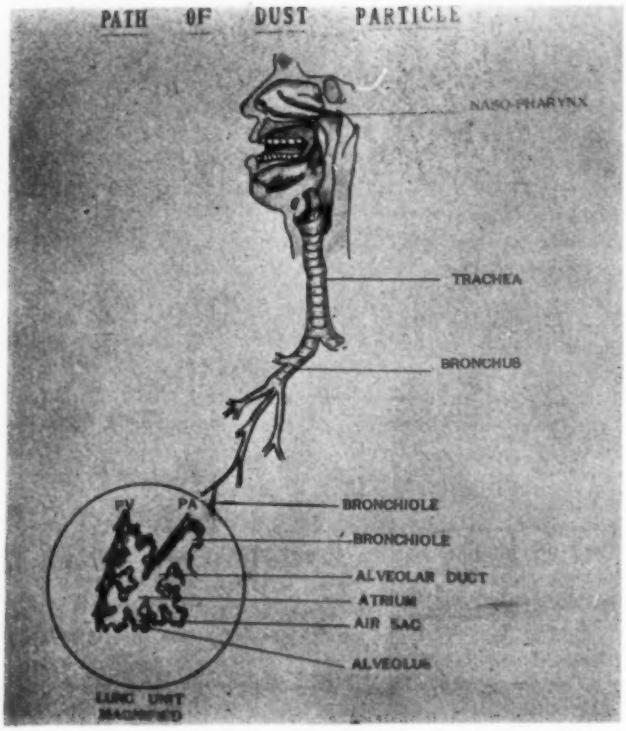
The occupational hazard of asbestos is not particularly significant. Its recognition as a clinical entity in industrial medicine is important, but judging from the comparatively small number of persons exposed in this country, the actual amount of disability resulting from the disease is not great.

In one of our plants where considerable asbestos is used in the manufacture of automobile brake linings, a recent survey of 189 employees exposed to variable amounts of dust, revealed no actual cases of fibrosis. A few men's films showed haziness which suggested evidence of the disease, but they were not sufficiently typical to warrant a diagnosis of asbestosis. However, it should be stated that the hazard in this particular plant is well controlled by adequate exhaust ventilation.

FROM the mass of evidence accumulated during the past 25 years, it now seems definitely established that silica is the public enemy No. 1 of those engaged in dusty occupations. By itself and in combination with other dusts, it offers a harmful exposure to a conservatively estimated 500,000 workers in the United States alone. In spite of this fact, most observers are now of the opinion that silicosis, uncomplicated by infection, is not a disabling disease. However, the fertile field it affords for the development of tuberculosis makes it imperative to disregard its benign characteristics and view it with suspicion until otherwise proven innocent.

The Committee on Pneumoconiosis of the Industrial Hygiene Section of the American Public Health Association defines silicosis as "a disease due to breathing air containing silica ($Si\ O_2$), characterized anatomically by generalized fibrotic changes and the development of military nodulation in both lungs, and clinically by shortness of breath, decreased chest expansion, lessened capacity for work, absence of fever, increased susceptibility to tuberculosis (some or all of which symptoms may be present) and by characteristic x-ray findings." Gardner[14] points out that an objection to this definition is that it recites symptoms which are not always present except in advanced cases. He suggests the following as being more simple and adequate:

"Silicosis means a disease of the lungs due to breathing air containing uncombined silicon dioxide ($Si\ O_2$) dust, characterized anatomically by generalized nodular fibrotic changes throughout both lungs which are demonstrable by x-ray examination and by autopsy and resulting from any process of occupation involving inhalation of silicon dioxide dust."




**Diagrammatic representation of pathway of dust particle illustrating factors involved in natural defense mechanism of the body**

The disease has been known as a clinical entity since the year 1871, but not until recent years was it recognized in industries other than hard rock mining. Silica is a most abundant constituent of rocks and minerals. With its compounds, it makes up 65% of the earth's crust. It occurs in two forms, free and combined. The combined forms are known as silicates (previously referred to).

Probably no other mineral is more widely used than silica and its compounds. Some of the more common occupations providing exposure are mining, tunneling, processing ores, quarrying, stone cutting and polishing, manufacture of abrasives, sand blasting, and grinding. For a complete list of the uses to which silica may be put see the table "Occupational Environment" by LaDoo.

To appreciate the pathological changes occurring in silicosis, it is well to recall the natural mechanism of defense in the respiratory tract itself. Nature has provided a barrier to dust and foreign particles at the point of entry into the body. The fine hairs of the nostrils and the mechanical arrangement of the upper respiratory tract offer considerable resistance to large particles and provide a very effective means of protection against all but the very fine dusts. Probably the greater part of the inhaled particles are eliminated by the upward current created by the ciliated epithelium of the trachea and bronchi. Beyond this point, the alveolar phagocyte or "dust cell" provides further elimination by transporting particles to the point where the cilia become effective.

It is believed that the particles from 0.5 to 3 microns in size are the only ones capable of producing pulmonary fibrosis. Those above 3 microns are elim-

inated by the upper respiratory tract while few of those below 0.5 micron actually remain in the alveoli.

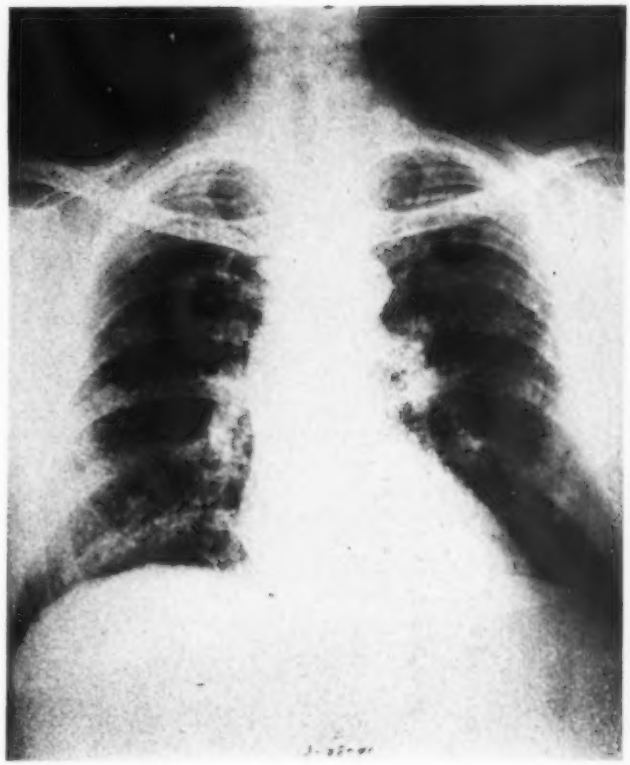
In the actual production of fibrosis, the phagocytes, which probably originate from the inner surface of the air sac or the lining of the capillary blood vessels, pick up the fine dust and pass to the lymph spaces to be transported to more distant points by the lymph vessels along the normal course of drainage towards the hilum of the lung. In this process, particles become deposited in the interlobular tissue and nodes along the vessels. Here, it is thought, the body fluids produce a slow chemical reaction which results in the death of the dust cells and necrosis of the surrounding tissue. This stimulates the proliferation of fibroblasts and the ensuing scar inhibits the further removal of dust. The interference with the flow of lymph causes a spread of the phagocytes toward the pleura, and fibrosis appears in the interlobular septa and along the lymphatics which accompany the blood vessels. As the process goes on, small nodules of fibrous tissue become scattered throughout the lung giving rise to the so-called noduar condition typical of silicosis. These nodules may increase in size and eventually coalesce, forming massive fibrotic areas which destroy the air sacs and result in compensatory enlargement of neighboring alveoli, or in other words, emphysema.

Microscopically, the typical nodule of mature form consists of concentric whorls of dense hyaline collagen fibres. The border is sharply defined with no exudate in the adjacent air spaces. The nodule may contain black pigment distributed either about the periphery or in focal collections in the interior.

Symptoms in silicosis depend largely upon whether the disease is complicated by infection (tuberculosis) or not. In simple or uncomplicated silicosis, they are absent or very few. In a great many instances people with well developed nodulation are entirely unaware that anything is wrong with their lungs. The commonest symptom is "shortness of breath," but frequently this complaint has to be elicited from the individual, and then he will often qualify it by stating that "he is not as young as he used to be." In some cases the actual dyspnea as observed by exercise tests, is less than the amount complained of. These discrepancies demonstrate the need of looking for causes of shortness of breath other than silicosis. Fever, cough, expectoration and rales are rarely encountered. If they are met with in moderate pulmonary fibrosis, they are probably due to an acute respiratory infection. Some silicotics tolerate colds and even pneumonia with surprising resistance. Physical signs are usually lacking.

When the disease progresses, however, and if the individual *does* show evidence of his condition, the symptoms and signs can be more definite. The shortness of breath is practically constant and is often associated with palpitation of the heart. The appearance of dry cough, sputum, loss of appetite, and increased fatigue should arouse suspicion of infection.

"Complicated silicosis" in the vast majority of cases means silico-tuberculosis. It is what the older men knew as "miners' complaint" or miners' consumption. The susceptibility of silicotics to tuberculosis is well known, but the reason for it is still obscure. The fatal outcome in practically all cases of death from silicosis is usually due to tuberculosis. Not so many years ago it was believed that persons with silicosis and tuberculosis would inevitably die. There is now reason to believe that this is not necessarily true. In my own experience, I have seen cases with well marked nodulation develop infection and show a positive sputum which later became negative after a period of hospitalization. A survey of practically any group of hard



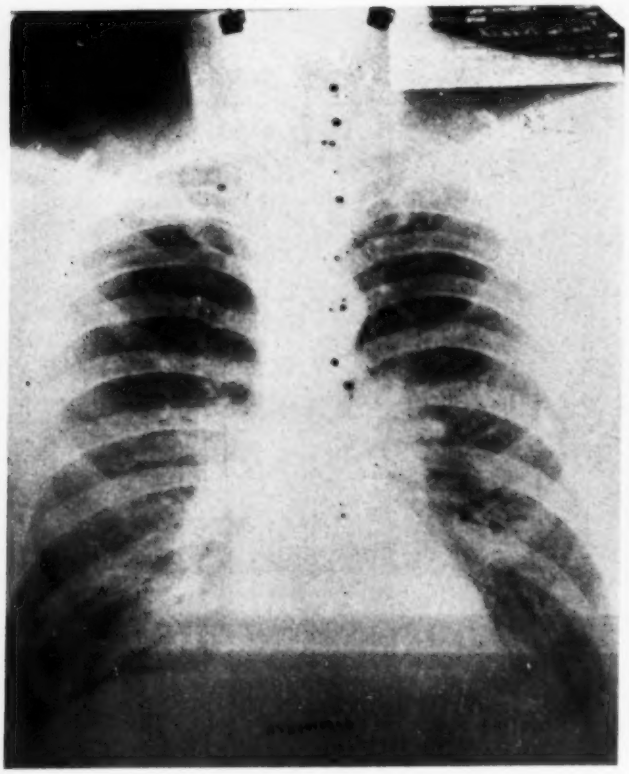
**Discrete nodulation of second degree silicosis (uncomplicated) in an iron miner**

rock miners will show a considerable number with evidence of healed tuberculosis. However, the fact remains that once tuberculosis becomes superimposed on silicosis, the prognosis is extremely serious.

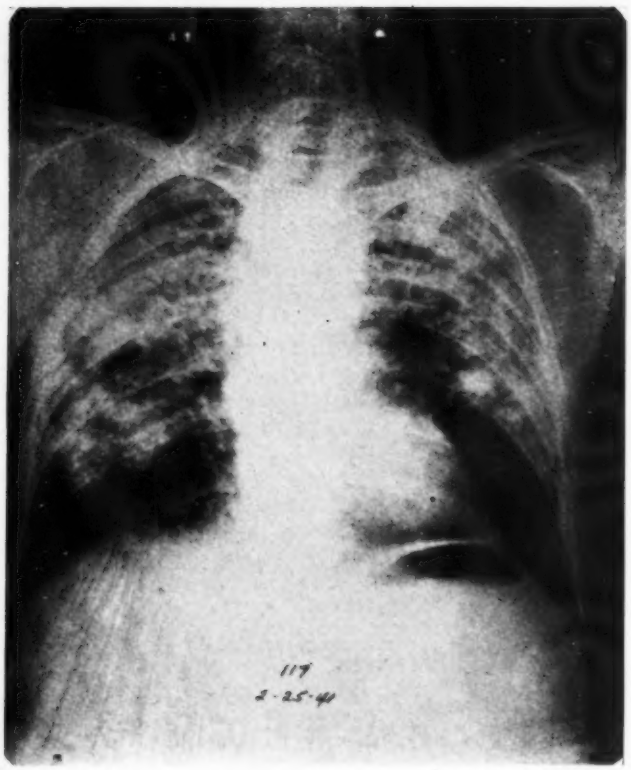
In chronic silico-tuberculosis the lungs, on gross appearance, are leathery or rubber-like in consistency, pigmented, and show areas of fibrous pleurisy where the lesions extend to the surface. The nodular fibrosis which is the characteristic feature can be felt immediately beneath the pleura. On section, the cut surface is rough and gritty, and the normal lung tissue has been practically replaced by extensive fibrosis or large masses of very dense, heavily pigmented scar tissue. The pleura is thickened and adherent. Emphysema is present. In active silico-tuberculosis, caseation and pneumonia of tuberculous origin may be present. On microscopic section this can be seen about the nodule.

Infection may be active or "fresh," healed or "old," and indeterminate. Symptoms will vary according to the stage of the disease. As the condition advances, the patient may exhibit the characteristic phthisic symptoms and signs, such as cough, loss of weight, dyspnea, chest pain, night sweats, tubercle bacilli in the sputum, and haemorrhage. He dies a characteristic tuberculous death. This is not always the case, however. Many individuals with far advanced silico-tuberculosis show surprising resistance and may be comparatively active up till a few hours before death, which may come rather suddenly and easily. I have seen such individuals and talked with them shortly before their demise and have anticipated no sudden termination of existence.

Progression of silicosis is extremely slow. Sometimes even in the presence of infection, it does not appear to advance very rapidly, but in certain instances the disease proceeds with astounding speed. Silicosis takes time to develop. Experience in South Africa indicates that approximately eight years are required for the condition to progress from a pre-silicotic stage to a silicotic one.



ASBESTOSIS




SILICOSIS

**X-rays demonstrating shadows in asbestosis and advanced silicosis**

Because of the lack of physical signs and symptoms, a classification of the stages of silicosis is only practical when based on x-ray findings. Various observers have made their own tabulations, but the one worked out by Sampson[15] affords a practical and satisfactory grouping:

TABLE IV.

A. UNCOMPLICATED SILICOSIS:
- N —Normal chest.
- $P_1$—Stage of peritruncal exaggeration.
- $P_2$—Stage of marked peritruncal exaggeration. (Pre-Silicosis)
- $S_1$—First degree nodulation — (Linear markings obliterated and nodules up to 2 mm. in diameter present.)
- $S_2$—Second degree nodulation (Nodules 2 to 4 mm. in diameter.)
- $S_3$—Third degree nodulation (Nodules over 4 mm.)

B. COMPLICATED SILICOSIS:
1. Silicosis with fresh infection.
2. Silicosis with old infection.
3. Silicosis with indeterminate infection.

In silicosis the x-ray appearance of the chest differs considerably from that of abestosis. In the accompanying table the more characteristic features of each are tabulated as an aid in differential diagnosis:

TABLE V.
X-RAY APPEARANCE

| ASBESTOSIS | SILICOSIS |
|---|---|
| Diffuse lesions limited to lower halves of lungs—Hyperventilation in upper portions. | Nodular lesions distributed more in upper and mid-lung fields or generalized-emphysema in lower halves. |
| Obliteration of the diaphragm. | Shortening of long diameter of chest with adhesions and tenting of diaphragm. |
| No nodulation. | Marked nodulation. |
| "Ground glass" appearance. | Discrete nodulation to massive conglomerate shadows. |
| May be unilateral. | Bilateral. |

Certain other conditions such as fungus infections, miliary tuberculosis, miliary calcification and miliary carcinoma produce shadows in the roentgenogram which may be confused with those of silicosis. In these instances careful study of the film and previous occupational history will usually be sufficient to make an accurate diagnosis.

As in all diseases due to dust, treatment is an engineering problem rather than a medical one. Once fibrosis is established in the lungs, it is permanent. Progression of the disease is very slow and chronic, except in some instances where infection occurs. Continued exposure to hazardous dust appears to be the biggest factor in the advancement of fibrosis. When dust is kept at a safe concentration in the air of working places, there is no good reason why a person with uncomplicated silicosis cannot continue his occupation.

By the same token, extreme care should be taken to eliminate contact with tuberculosis from these workers. This can only be accomplished by repeated chest x-rays of all those exposed to hazardous dust and removal of the ones showing evidence of infection.

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## Workmen's Compensation Procedure

*—The Weak Link—*

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THE shortcoming of the present procedure for the treatment of disabilities covered by workmen's compensation cannot be blamed on the lack of cooperation of the medical profession. The fee-splitting scandals which have attracted so much publicity in the State of New York, regrettable as they are, are not peculiar to workmen's compensation. They can hardly be held responsible for the unsatisfactory management of an undetermined number of cases, which in the final analysis results in a great loss of manpower hours, and leads to unnecessary expenses for both prolonged disability and medical care.

The crux of the problem lies in the long period of time which frequently elapses before the correct diagnosis of the injuries and the compensability of the alleged accident are determined. This period is of vital importance for quick and complete rehabilitation. Unfortunately the time is too often not utilized for the most efficient treatment.

Most of the injuries are not serious enough to necessitate immediate hospitalization. A great many however, require more than just emergency treatment with a few follow-up visits. But without authorization the physician—general practitioner or specialist—is not permitted to apply the more expensive diagnostic procedures, e.g., roentgen examination, or to proceed with a well-planned series of physical therapy. If efficient treatment is postponed until the compensability of the case is determined, the most valuable time for quick and complete rehabilitation is lost. Should the physician start the correct treatment immediately, following only his professional impulse, he runs the risk of not being able to collect his fee for services rendered, if compensability is denied later on. To escape this dilemma, the patient is frequently referred to a clinic (O.P.D.) which, at least in wartime, is hardly in a position to render the most effective treatment.

The general practitioner who sees the patient immediately after the accident has, as a rule, neither the experience nor the facilities to make a complete diagnosis of the injury. Moreover, he carries at the present time too heavy a burden to render the best possible treatment, even in ambulatory cases. Superficial examination may reveal only minor injuries, such as contusions, sprains or superficial lacerations. Some of these, however, may eventually lead to serious consequences, viz., Sudeck's atrophy, painful "frozen shoulder," late tendon or nerve injuries, traumatic osteoarthritis, and many other conditions.

There can be no doubt that correct and complete diagnosis of the type and extent of the injuries immediately following the accident, with careful attention to signs of pathology which are not the result of the injury, would have at least two advantages:

First, the injured worker would receive from the very beginning the most efficient treatment, based on correct diagnosis.

Second, the further procedure under the workmen's compensation laws would be simplified, with the greatest possible justice to all concerned. Later decisions regarding compensability in cases of lumbago, spondylosis, spondylolisthesis, osteomyelitis and others can be based upon the recorded thorough examination immediately following the accident, instead of upon differing expert opinions when the problem of "aggravation of pre-existing disease" comes up for decision weeks or usually months after the accident.

For all these reasons, the management of disabilities covered by workmen's compensation should be organized in such a way that within 48 hours following the accident, the nature and extent of the injuries can be determined, and a plan for the most efficient treatment can be outlined. This requires early examination of the injured workman by an expert or specialist who, for obvious reasons, should be neither employed by the insurance carrier nor permitted to treat the cases which he has examined. At the same time, it is necessary that a short cut be found by the insurance carrier for quick determination of compensability of an alleged accident, resulting in immediate authorization of the treatment as outlined by the expert.

Such management of the workmen's compensation procedure is undoubtedly possible. It affords the best possible rehabilitation of the injured workman, saving manpower-hours and expense: it eliminates a great deal of friction among claimant, insurance carrier and physician; and it minimizes the possibility of fraud and malingering.

## A Case of Onycholysis

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MISS A. M., age 42, single, working now as a house maid, appeared at my office in September, 1943, with a complaint of looseness of the finger nails, the nails becoming brittle and breaking. There was no pain whatsoever, unless the nail happened to break into the healthy skin. She said that they used to make soap, and that occasionally the lye would get under her nails. The condition was confined to the nails of the hand, the toe-nails being unaffected. Her physical examination was essentially negative. Her tonsils had been removed, and her teeth were normal. Her blood pressure 120/80; her pulse was rapid, being 96 per minute; her heart and lungs were negative; and her sedimentation test was 17 mm. at the end of an hour.

Since Oppenheim in 1909 (recounted by H. J. TEMPLETON, in *J.A.MA.*., December 26, 1931) presented several cases of onycholysis in women doing laundry work, knowledge of the incidence of this nail dystrophy among industrial workers has grown. SCHWARTZ and TULIPAN (Occupational Disease of the Skin, Philadelphia, Lea & Febiger, 1939) list bartenders, bottle washers, cigar makers, confectioners, farm laborers, fruit workers, gardeners, milkers, vegetable cleaners and washerwomen as prone to this disorder. Soap makers are not listed; but the number of women who make their own soap is small, and it seems possible that this job could precipitate an attack of onycholysis in a predisposed person.

The treatment in this case consisted in having the patient refrain from using soap, and then applying a weak acid glycerine to promote healing and counteract the effects of the alkali. When last seen, she showed no improvement, probably owing to the fact that she is still washing dishes in soapy water.

# Tetrachloroethane Poisoning

*—Seven Cases: Review of Several Treated—*

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THE WAR uses of tetrachloroethane have placed the chemical on a more or less secretive base and the exact nature of its uses in relation to the following cases cannot be divulged, but the fundamental facts are that each individual was exposed to tetrachloroethane and able to inhale the fumes and absorb through exposure to the skin, while in the fatal case actual direct contact with the chemical was made. This brings the cases within the interest of medicine and toxicology.

Six of the seven cases were non-fatal and, from all existing information, used the regular trade precautions (gas mask, rubber gloves and ventilating system) when working with the chemical. The fatal case admittedly used a rag and mop with bare hands to "clean up" spilled chemical from the floor.

## Name and Properties

TETRACHLOROETHANE, or acetylene tetrachloride ($C_2H_2Cl_4$ or $CHCl_2CHCl_2$), goes under a number of trade names, e.g., "Alanol," "Westron," "Emaillet," "Navania," and in Germany as "Quitternerlack." It was previously called "Tetraline," but this name was discontinued owing to the confusion resulting from the similarity between it and the trade name of tetrahydronaphthalene—"Tetraline."

It is a colorless, mobile liquid with an odor resembling chloroform and carbon tetrachloride. It is non-inflammable, and attacks copper, iron, nickel, and lead slightly and aluminum vigorously. In the presence of moisture HCl is slowly liberated. The boiling point of the commercial product is 140-150 C; the specific gravity is 1.600-1.602. Tetrachloroethane has been used as a solvent for cellulose acetate and nitrate, resins bitumen, waxes, pitch, tar, rubber, oils and sulphur.

The chemical in peacetime has found its way into the commercial field in many industries. It is a dry-cleaning agent, a lacquer solvent, used in the manufacture of rubber, film, artificial silk, artificial pearls, leather and safety glass as well as in the making of tube cements, adhesives, floor waxes, fire extinguishers, and to impregnate furs and skins.

## Toxicity

ACCORDING to Lehmann's figures for "monophasic" toxicity, tetrachloroethane is the most toxic of the chlorinated hydrocarbons and produces not only a narcotic effect but also profound metabolic injury, especially atrophy of the liver. The toxicity can be so rapid upon ingestion as to produce death before liver injury is shown. In cases reported by Hepple (1927) and Elliott (1933), both from drinking "Silk Cleaning Fluid" proved to be tetrachloroethane, both men died, one in eight hours and the other in 12 hours.

The narcotic toxicity of tetrachloroethane has always been considered as four times that of chloroform, but according to Lehmann's values this only holds true for the "monophasic" toxicity (i.e., in the form of vapor). The "diphasic" (i.e., in the form of condensation in the room depending on temperature and moisture and representing the secondary and cumulative effects) toxicity shows chloroform to be five times that of tetrachloroethane.

## Absorption through the Skin of Animals

SCHWANDER (1936) showed tetrachloroethane exhibited its typical toxic effects, both narcotic and metabolic, after absorption through the skin. His experiment included the demonstration of the vapor in the air expired by a rabbit after application of tetrachloroethane to its shaved abdomen. Typical narcosis was produced and fatty degeneration of the liver and, slightly, of the kidneys was found postmortem.

## Symptoms

TETRACHLOROETHANE poisoning seems to follow one of two paths, either the predominating symptoms are related to the nervous system or the gastro-intestinal system. There is the possibility, with several cases to substantiate the belief, that both nervous and gastro-intestinal systems may be involved at one and the same times. However, the distinction of nervous or gastro-intestinal involvements holds true in almost all cases. The seven cases we have under consideration followed the gastro-intestinal course exclusively.

Parmenter (1925) believed that both nervous and gastro-intestinal symptoms might appear together, the gastric representing a more severe manifestation and more advanced stage of intoxication. Sollinger (1931) disputed Parmenter, and was inclined to the belief that where patients show pronounced nervous symptoms there are usually no liver disturbance, particularly no icterus.

## Nervous Form

LERI and Breetel (1922) described symptoms of the nervous form as follows: Paralysis of the interossei muscles of the hands and feet and anesthesia or hypoesthesia of the regions supplied by the interossei nerves. Feil and Heim de Balzac (1924) observed eight out of 11 workers in the artificial pearl industry showed paralysis of the palate and dilated pupils. Zollinger (1931) stated that the nervous syndrome of tetrachloroethane poisoning usually begins with numbness and tingling of the fingers and toes, tremor of the hands and pricklings in the soles of the feet, and, in some cases, abnormal perspiration and twitching facial muscles. Disturbances of the motor and sensory reflexes of the upper and lower extremities are common.

Leri and Breetel have suggested the nervous symptoms may be caused by the skin absorption as well as inhalation in that, in almost all cases where contact has been made, nervous symptoms result. However, in the fatal case to be discussed later, skin contact was made but nervous symptoms did not follow, unless the gastro-intestinal symptoms progressed too rapidly to permit the nervous symptoms to appear.

## Six Cases

THE six cases under consideration were all white, two males aged 40 and 64, and five females aged, 22, 39, 51, 59 and 62. The male, 64, was the fatal case and worked as a janitor.

Each case, upon admittance to the hospital, gave no family or personal history of contagious or systemic disturbances, but admitted the usual pediatric diseases, although it was later learned that the fatal case had suffered from cardiac trouble some five to six years previous. There was, no doubt, some kidney and liver damage existent at the time of his employment.

The fatal case was obese, deeply jaundiced, and complained of pain in the right upper quadrant and tenderness on palpation. The sclera was deeply jaundiced, while pupils reacted to light and accommodation. The ears, nose and throat all presented a jaundiced picture. The heart was 130, with irregular rhythm and force, also missing on occasional beat (not regular).

The abdomen showed tenderness at right lower costal angle as well as the epigastric region. Deep

jaundice over the entire body with some cyanosis but no dyspnea or edema—toward the end there were dyspnea and ascites.

The urine analysis showed a dark amber color, acid, S.g. 1.020, and quite cloudy. It showed a trace of albumin and was negative to sugar. Microscopic tests disclosed rare pus casts, rare hyaline and a few coarsely granulated and finely granulated casts. The urine picture did not change markedly over the next six days.

The blood count on admittance showed a red of 4,470,000, white 4,650, with hemoglobin 85% and color index 0.9. Icterus index 125 units. Prothrombin time (Hawell's method) 5 minutes.

Three days later the red count had fallen to 4,090,000 and the white had climbed to 13,700, with hemoglobin 75% and color index 0.9. Five days after admittance the icterus index dropped to 79 units, while two days later it had climbed to 215 units.

A close following of the case shows a distinct progression through markedly differing stages:

The patient complained of fatigue, loss of appetite and headache followed by nausea and vomiting existing for six days prior to admittance and beginning the day after contact with tetrachloroethane. These symptoms combined with tenderness over the stomach and liver region suggested the first stage of prejaundice period of Willcox (1914).

Prior to hospital admittance the second, or "jaundice without toxemia," stage began and the patient was more than likely in this stage upon admittance. Symptoms of the first stage had deepened with increased abdominal pain, positive bile in the urine and clay stools.

For six days progressive clinical jaundice, irregular rate and rhythm of the heart and periodical pains were combined with anorexia and nausea showing a typical third stage (jaundice with toxemia) described by Willcox.

The fourth or fatal stage resulted 20 days after contact with tetrachloroethane and can best be described with the autopsy findings.

The entire body and conjunctiva were jaundiced. A considerable amount of dark fluid exuded from the mouth and nose. There was no excess fluid in pleural cavity, and no adhesions. The pericardial sac presented the same picture.

The heart was definitely enlarged and presented a marked left ventricular hypertrophy and weighed 725 grams. The right auricle was dilated markedly, with the tricuspid ring wider than usual. The right ventricle was normal, and the left auricle was normal, as were the mitral and aortic valves. The left ventricle was concentrically hypertrophied at the base, with the muscle measuring ¾ of an inch in thickness. The endocardial surface of the left ventricle was thickened and its appearance was exaggerated by the icteric discoloration. The aortic ring was normal in size and the aorta smooth, but intensely jaundiced.

The lungs presented no evidence of pneumonia, and the larger bronchi were filled with a frothy dark hemorrhagic fluid.

About 1000 cc. of a bile stained hemorrhagic fluid were found in the peritoneal cavity. Some of the loops of the small gut presented fibrinoid adhesions. Mucosa presented a straw color throughout.

The esophagus was normal. The stomach was tremendously dilated and filled with 2500 cc. of dark blood-stained thickish fluid. The rugae were considerably flattened but the stomach wall was otherwise not unusual. A similar type of fluid was present throughout the large and small gut. No edema in the gut wall was encountered anywhere in its course.

The liver weighed 1440 grams and was a fawn color, its surface finely wrinkled and minutely granular. It was firm to the touch and cut with definite increased resistance. The cut surface was mottled with small speckled brownish areas intermingled with larger pale yellowish ones. These areas were found uniformly throughout the liver.

The gall-bladder was markedly distended and filled with greenish bile which could be readily expressed into the duodenum.

The pancreas was normal, while the spleen was moderately enlarged, weighing 350 grams, and had several nodular areas on its surface. It was soft in consistency and flabby. Its cut surface presented a salmon-red homogenous appearance.

Both kidneys appeared enlarged and swollen. The right weighed 300 grams, the left 350 grams. As to both, the hilum was dark green in color with a smooth surface, but section showed a speckled appearance with small stippled greenish areas in the medulla.

The adrenal glands and ureters were normal.

### The Diagnosis

CIRRHOSIS of the liver, with super-imposed hepatitis.
2. Severe jaundice.
3. Hypertrophy of the heart.
4. Hemorrhagic diathesis with bleeding into gastro-intestinal tract.
5. Ascites.

The six non-fatal cases will be dealt with in a group, in that they followed an almost similar series of steps. The male, aged 40, will be designated as Case I; the female, aged 39, as Case II; the female, aged 51, as Case III; the female, aged 62, as Case VI; the female, aged 24, as Case V; the female, aged 59, as Case VI. All were the gastro-intestinal type and did not advance beyond the first stage described by Willcox, probably owing to the fact they were removed quickly from the presence of the poison and immediately put under medical care.

Cases I, II, III, IV, V, and VI, are slowly recovering. The nausea, vomiting, anorexia and jaundice are disappearing after a month's rest and treatment. They will not be permitted to return to their former work under any condition, since almost every case of reported poisoning with tetrachloroethane has been found to relapse quickly with a second exposure to the chemical. Characteristically the icterus index increased for about three days after hospitalization. These patients seemed improved, so far as gastric symptoms were concerned, immediately on beginning treatment.

The tolerance of the stomach which was the most distressing complaint showed improvement in a few hours. Most of the patients had reached the stage where they vomited practically all the food ingested. The vomitus in most every incidence was dark colored. These people, practically to the individual, had noticed that their illnesses were ushered in by occasional vomitings for a period of one to two weeks prior to their ceasing work.

The weakness associated with the condition is out of proportion in severity to the period of illness.

In all of the patients under discussion there have been constant findings, namely, weakness, vomiting, pain and marked tenderness over epigastric region just below the xyphoid. In the early period of treatment there were periodic sweats in three of the cases. There has been no paralysis of the interossi, as mentioned in the nervous type.

Tremors are not noted, and no case has complained of tingling in the extremities. There has been an

occasional mention made by patients of numbness in the fingers, but these symptoms gradually disappeared as treatment and improvement progressed.

There has been no irritation or tendency of mucus membrane to bleed, of course vitamin K has been used in all of the cases. Headaches, dizziness, constipation and diarrhea have not been brought to attention as any part of the sickness.

In almost every case there has been a small loss of weight averaging from five to eight pounds per patient. The average period of hospitalization is about three weeks for the severer types. The milder cases, those people whose icteric indices have been in the neighborhood of 60, have been hospitalized for approximately two weeks.

After about five days of hospital care the patients show progressive improvement. Hospitalization was terminated when the icteric indices had fallen to the clinical jaundice bracket. After hospital release the treatment was carried on privately, with the patients coming to the office. The exercise and satisfaction of being out of the hospital seemed to brighten them mentally and they slowly progressed to normal in each case—although, in two instances, the skin retained a lemon hue even after the blood icterus had returned to normal.

The amount of organic damage remains to be seen. Sufficient time has not elapsed to make a definite prognosis, and continued observation of each patient should be made at frequent periods.

## Laboratory

LABORATORY work that had been done routinely is as follows: Complete blood count was made at intervals of five to six days. There is always a moderate secondary anemia and marked increase in white counts. Blood Wassermanns have been done on all hospitalized cases, which in all cases were negative. Urine analysis were almost constant, as will be noted on the charts. Vandenberg tests were made on occasions with practically the same qualitative report in each, i.e., immediate direct positive. The quantitative results varied with the individual. Blood sugars have not been done routinely, as there was no evidence justifying this procedure. Furthermore, these people have been getting glucose intravenously daily. This, of course, causes an increase in the blood sugar during this period. The urines have only shown traces of sugar after glucose administrations. Electrocardiographs were done in only one case, because of predominating dyspnea and slight edema. This was in Case III. A non-protein nitrogen was done on this case, which did not show any appreciable rise.

Sedimentation rates were done in two cases, which did not give a diagnostic result. This has not been repeated as a routine procedure.

Prothrombin time was done on three of the cases, which showed no increase. This procedure has not been routine, as we have had no clinical ecchymosis or bleeding.

| | Jaundice | Nausea | Vomiting | Anorexia | B.P. | Rate | Color | Reaction | Sp. Gr |
|---|---|---|---|---|---|---|---|---|---|
| CASE I | + | + | + | + | 120/70 | 90 | Amb. | Alk. | 1.015 |
| CASE II | + | + | + | + | 150/100 | 88 | Amb. | Alk. | 1.014 |
| CASE III | + | + | + | + | 130/90 | 92 | Straw | Alk. | 1.010 |

| | Albumin | Sugar | R.B.C. | W.B.C. | Hbg. | C.I. | Ict. Ind. | Prothrombin |
|---|---|---|---|---|---|---|---|---|
| CASE I | Tr. | – | 4,080,000 | 13,300 | 75% | 0.9 | 111 Units | 15 Sec. |
| | | | 3,900,000 | 11,000 | 75% | 0.9 | 125 Units | |
| | | | | | | | 100 Units | |
| | | | | | | | 62 Units | |
| CASE II | Tr. | – | 4,190,000 | 8,500 | 70% | 0.9 | 83 Units | No Rep. |
| | | | 5,030,000 | 11,000 | 75% | 0.75 | 33 Units | |
| | | | | | | | 22.5 Units | |
| CASE III | Tr. | – | 3,400,000 | 4,400 | 65% | 0.9 | 18.2 Units | No Rep. |
| | | | 3,850,000 | 5,300 | 70% | 0.9 | 38 Units | |

| | Jaundice | Nausea | Vomiting | Anorexia | B.P. | Rate | Color | Reaction | Sp. Gr. |
|---|---|---|---|---|---|---|---|---|---|
| CASE V | + | + | + | + | 98/64 | 80 | Light Amb. | Acid | 1.015 |
| CASE VI | + | + | + | + | 94/56 | 76 | Amb. | Acid | 1.022 |
| CASE VII | + | + | + | + | 128/72 | 70 | Amb. | Acid | 1.017 |

| | Albumin | Sugar | R.B.C. | W.B.C. | Hbg. | C.I. | Ict. Ind. | Prothrombin | Urine |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 96 Units | | Bile |
| CASE V | Tr. | – | 4,000,000 | 10,400 | 75% | 0.9 | 127 Units | – | Pus Casts |
| | | | | | | | 82 Units | | Bile |
| CASE VI | Tr. | – | 3,930,000 | 8,200 | 75% | 0.9 | 30 Units | – | Pus Casts |
| | | | | | | | 62 Units | | No Casts |
| CASE VII | Tr. | – | 4,900,000 | 7,750 | 75% | 0.9 | 33 Units | – | Few Pus |

| | Jaundice | Nausea | Vomiting | Anorexia | B.P. | Rate | Color | Reaction | Sp. Gr. |
|---|---|---|---|---|---|---|---|---|---|
| CASE V | + | + | + | + | 122/76 | 92 | Light Amb. | Acid | 1.011 |
| CASE VI | + | + | + | + | 118/82 | 84 | Light Amb. | Acid | 1.018 |
| CASE VII | + | – | – | + | 142/80 | 88 | Light Amb. | Acid | 1.016 |

| | Albumin | Sugar | R.B.C. | W.B.C. | Hbg. | C.I. | Ict. Ind. | Prothrombin |
|---|---|---|---|---|---|---|---|---|
| | Slight | | | | | | 57 Units | |
| CASE V | Tr. | – | 3,450,000 | 6,500 | 65% | 0.9 | 45 Units | – |
| | | | | | | | 90 Units | |
| CASE VI | Tr. | – | 4,040,000 | 4,600 | 75% | 0.9 | 53 Units | – |
| | | | | | | | 32 Units | |
| CASE VII | Tr. | – | 4,170,000 | 6,500 | 80% | 0.9 | 47 Units | – |
| | | | | | | | 12.5 Un. | |

The urine does not appear to be decreased appreciably in quantity, although fluids have been pushed.

Routine laboratory procedures are icteric indices, urine analyses, blood counts (complete), and additional routines should the case at hand demand it because of outside odd symptoms.

## Treatment

THE treatment that was used in all cases, and appeared to have considerable value in them, is as follows:

Daily injections of liver, 1 cc., intramuscularly.

Daily glucose injections, 25 cc., of 50%, or 1000 cc. of 5%, plus saline solution. High carbohydrate diet.

Rx: Calomel ¼ gr.,
Magnesium sulphate 7½ dr.
Podophyllin 1/12 gr. Sig. I dose T.I.D.

Choline chloride, gr. V.B.I.D., has been used recently, but the value has not been demonstrated.

Supplementing the above, the patients have been given alkaline drinks and fruit juices freely.

A total of 14 cases have been treated, with one fatal case; the others have made what is apparently complete recovery.

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Autopsy Report by HOWARD A. COYER, M.D., MAJOR LOUIS FERRARO and LT. MYERS. 1942.

# Health Hazards

*—In the Use of Tetrachlorethane—*

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THE USE of tetrachlorethane (acetylene tetrachloride) has become quite prevalent in modern industry. The increase in its use is due largely to war industries. Because of this large increase in usage, physicians dealing with industrial establishments should make themselves aware of its toxic properties.

The authors have come into contact with numerous industries which were using this chemical without being aware that it is a toxic chemical and that very definite precautions must be taken when it is being used; and they have been permitted to observe the action of this toxic agent on an aggregate of 1000 persons who have been exposed continuously during the past two years in one important war plant.

## Chemistry

TETRACHLORETHANE (acetylene tetrachloride), $C_2H_2Cl_4$, is considered to be one of the most toxic of the chlorinated hydrocarbons. Brandt[1] lists its toxic limit as 10 p.p.m. It is a halogen derivative of the homologue of methane. It is a non-inflammable, yellowish liquid with a chloroform-like odor. According to von Oettingen,[2] it has a molecular weight of 167.84. Its specific gravity is 1.600 at 20°/4° C. It solidifies at —36° C, and boils at 146.3° C. It is insoluble in water but is freely miscible with alcohol or ether.

The uses of tetrachlorethane are many and varied. It is found in lacquers, solvents, degreasers and antiseptics. It is used for other war purposes.

## Toxicology

COMPREHENSIVE investigative work on tetrachlorethane has been done by von Oettingen.[2] It may be absorbed both through the lungs and skin. It is excreted through the kidneys. It produces depression of the central nervous system, causing narcosis and death by respiratory paralysis. Lehmann and Schmidt-Kehl[3] found that concentrations of 0.09 mg. per liter may be tolerated without effect for 10 minutes but that inhalation of 1 mg. per liter for 30 minutes, or of 2.3 mg. per liter for 10 minutes, will cause irritation of the mucous membranes, pressure in the head, vertigo and fatigue. During narcosis the peripheral blood vessels are dilated and, as with chloroform, the heart ventricle may be arrested. Cases have been reported in which tetrachlorethane causes hemolysis of the blood, fatty degeneration of the liver, kidneys and heart, irritation of the gastrointestinal tract and degeneration of nervous tissues. Several fatalities have been reported.

## Symptoms

OUR experience deals with individuals working with tetrachlorethane in several different types of operations. Exposure concentrations varied from slight to heavy. It was virtually impossible to measure exact concentrations because of the inaccuracy of all methods attempted. Because we realized that the chemical possessed toxic properties, every precaution was taken to insure that exposure was kept at a minimum and that exposed individuals received early treatment.

Of course the symptoms of each patient varied as to the degree of exposure. The most common presenting symptoms in all cases were nausea, heartburn, palpitation, vomiting, gastric pain and anorexia, headaches and dizziness. In most instances these were the only symptoms, and they disappeared upon removal of the individual from the fumes. Physical and laboratory examinations in mild cases were usually negative except for an early rise in the icterus index above 10.5. This figure was used as a pathological limit. Laboratory examinations consisted of a complete blood count, urinalysis, icterus index, Vandenberg test, blood sedimentation rate and, in some instances, blood non-protein nitrogen and urea tests. A chest x-ray was done in certain cases.

In cases with a heavier exposure concentration, the presenting symptoms were accompanied by various degrees of jaundice (scleral early), reflex changes, nerve irritation, anesthesia, nephritis and heart changes. The degree of jaundice varied from mild to very severe. The most severe cases presented enlargement and tenderness of the liver. Tremor and nerve paralysis appeared in some. This was always transient. Increased nervousness and prostration were fairly common. Nephritis, as evidenced by albuminuria, casts, red blood cells in the urine and kidney tenderness, occurred in some. The appearance of a systolic blowing murmur over the apex led us to believe that some heart irritation was possibly present. No evidence of persistent heart damage was noted. Various degrees of anemia occurred, but this was the exception rather than the rule in early cases of toxicity. The toxin appeared to attack the liver *per se*, rather than the blood cells. A lowering of the red blood count and hemoglobin content, an increase in the white blood count, an increase in the platelet count and an increase in monocytes and lymphocytes were the usual picture in the advanced cases. Chest x-rays were usually negative. Liver, kidney and nerve damage persisted in proportion to the amount of original damage. No cranial nerve paralysis was listed, and no fatalities were seen. The anemia was in all cases transient and responded very well to treatment. Contrary to early belief as to their occurrence, no menstrual disturbances were observed. In the study of 1000 people who were exposed to tetrachlorethane, 25 cases were observed with varying but positive evidence of toxicity as revealed by a rise of the icterus index. Of this group 21 were females and four males. Approximately 80% showing sensitivity were colored, or of Latin ancestry. It might be said that these races represented less than 10% of the total number of employees. The average age of those showing symptoms was 45. It was only after exigencies required the hiring of older female employees that the authors observed most of the cases of toxicity in the one large war industry plant studied. Ninety per cent of those affected showed a tendency toward obesity; 50% of this group demonstrated symptoms before five weeks' exposure to the agent. The remainder were scattered over varying periods, with the shortest occurring after one week's exposure and the longest after 17 weeks' exposure. No cases of dermatitis were seen that could be attributed to tetrachlorethane.

## Treatment

IT IS IMPERATIVE that at the first sign of poisoning the individual must be removed from the vapors; and, except in very mild cases, this must be permanent removal. In mild cases the treatment is symptomatic. In

the more severe cases bed rest is necessary and should be continued until all signs of poisoning have disappeared. It is the experience of the authors that the icterus index is the simplest and most accurate test to ascertain degrees of progress of the patient. It was found that 1000 cc. of intravenous 5% glucose should be given once or twice daily. Liquids should be forced. A bland diet is to be prescribed. Liver and iron are prescribed for the anemia, with whole blood transfusions being given in the more severe cases. Multiple vitamin capsules are a valuable adjunct. Frequent examinations are necessary to determine the degree of pathological damage.

### Prophylaxis

ALL PROSPECTIVE employees must receive a thorough pre-employment physical examination. This should include a physical examination, a complete blood count, a blood icterus index, a blood Kahn or Wassermann, blood sedimentation rate, and urinalysis. Chest x-ray should also be included. Evidence of blood, liver, kidney, heart, lung, gastro-intestinal disease or pregnancy should preclude employment. It has been proved that obese women over 45 of the colored or Latin races are extremely poor risks, especially in the presence of any foci of infection.

2. Periodic examinations of all employees should be performed at least once monthly. This should include a complete physical examination, a complete blood count, urinalysis, blood icterus index, blood sedimentation rate and, in some cases, a blood Wassermann. Scleral icteric tinge should be watched for meticulously. Foci of infection should be diligently searched for and eliminated. Chest x-ray should be taken about every six months. Any sign of toxic effect in the individual should be sufficient cause for removal from exposure.

3. A closed-type ventilation system should be employed. A planned program of shifting the employees from points of greater to less exposure at designated intervals should be followed.

4. Constant inspection and maintenance of protective equipment, such as gas masks, gloves and coats, is necessary. Since tetrachlorethane is a solvent, frequent leaks occcur with ensuing dangerous escape of vapors; this necessitates careful maintenance of operating machinery.

5. At all points where vapors might be encountered, the use of protective equipment, such as respirators, synthetic rubber gloves and protective clothing, should be enforced. This equipment should be continually inspected.

6. Protective creams are also valuable to all individuals who are exposed to tetrachlorethane, although no case of contact dermatitis could be attributed to tetrachlorethane in the series of 1000 people who were observed.

7. Shower and locker facilities are necessary for all employees. Employees must be required to shower and change clothes on finishing each day's work.

8. The employees must be required to wash their hands thoroughly before eating. Lunch rooms which are separate from the plant should be provided to permit all employees to eat in an environment absolutely free from all tetrachlorethane vapors.

### Summary

TETRACHLORETHANE (acetylene tetrachloride) is a highly toxic compound which, with proper care, can be used with reasonable safety.

2. Careful pre-employment examination must be performed to exclude all individuals with organic pathology.

3. Careful monthly periodic examinations should be made. Any sign of toxic effect should be sufficient cause for removal from exposure. The icterus index has been found to be the most practical and efficient test to determine early toxic effects as well as the progress.

4. A closed system of operation should be used.

5. Protective equipment should be employed. This must be constantly inspected.

6. Older, obese, colored individuals were found to be especially susceptible.

7. It is the opinion of the authors that a diet excessively high in fats was a large factor in individual susceptibility. In view of this, it is recommended that a study of the dietary habits of all employees be made. Strict surveillance, and distribution of diet sheets to each employee, should be used to bring about reduction in fat intake, with an increase of carbohydrates and proteins. Every employee should be admonished to maintain the best personal hygiene possible through diet, adequate sleep and rest, use of vitamins, and absolute abstinence from alcoholic beverages or drugs.

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## Dermatitis from Mahogany Wood

*—(Swietenia Macrophylla)—*

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A YACHT YARD which had been building small wood boats suddenly had an outbreak of dermatitis among the workers in the woodshop. Previous to the outbreak there had been no cases of occupational dermatitis attributable to wood. The outbreak began soon after the yard had started using mahogany wood from South and Central America, principally from Brazil and Honduras. Schwartz[1] had previously reported dermatitis in airplane factories caused by this wood, which is often called "Tabasco" mahogany by the workers. Previously the yard used a wood, now unobtainable, from the Philippines and known in the trade as "Philippine mahogany." There were no cases of dermatitis while this wood was being used. "Philippine mahogany"* is the trade name of several kinds of hardwood imported from the Philippine Islands, none of which belongs to the mahogany family.

Because the dermatitis started to develop shortly after the South American mahogany was used, the workers believed this wood was the cause of the dermatitis. The peak of the outbreak occurred during a hot part of the summer. This would be expected because the workers were wearing fewer clothes and therefore exposing larger areas of their skin to wood dust. Also, because they perspired freely, the dust had a more irritating effect.

An inspection of the woodshop showed the ordinary wood cutting and polishing operations. The room was dusty and there was no exhaust ventilation on the sawing and polishing machinery. About 40 workers were employed in the woodshop. Mahogany wood from

*The "Philippine mahogany" imported into the United States consists principally of yellow, red and white lauan, belonging to the family Shorea. Other hard woods such as "narra" may also be included.

South and Central America belonging to the Swietenia macrophylla and Oak wood obtained from domestic sources were processed. Casein glues were used.

A total of 19 workers were seen who had dermatitis. Of this number five had little or no dermatitis at the time of examination but stated that they had only recently recovered. Three had non-occupational dermatoses; i.e., cancer of the lip, psoriasis, chronic lichen planus. Two had traumatic ulcers of the skin. One worker, a painter, had a chronic scaly dermatitis on the dorsum of both hands, webs of fingers, and on the ankles where his shoes and stockings were spattered with paint. It resembled dermatitis caused by a volatile solvent, and was definitely not caused by wood. The remaining eight were all workers in the woodshop. They presented erythematous, papular, desquamating eruptions of the hands, forearms, legs, around the belt line and in the groin. The eruptions were fading at the time of examination, but some were said to have been vesicular a few days previously.

None of the cases was severe enough to cause lost time. All eight cases had the appearance and distribution of a contact dermatitis that would result from wood dust. The palms of some of the workers were stained a dark brown as if with walnut juice. They stated that the stain resulted from handling the mahogany. This was confirmed by the authors.

One of the men had been referred to a dermatologist who had patch tested him with the various woods used in the shop. The man reacted to all the South American mahogany woods, but not to the other woods. Three men were patch tested by us with Honduras mahogany and Brazilian mahogany. The patches were read in 48 hours. One of the men was positive to both types of mahogany, while the other two were negative. Ether extracts of the two woods were made in order to concentrate the irritant principle, and the three individuals were patch tested with the extracts. The individual who was positive to the wood also had a positive reaction to the extracts. One of the other men who was negative to the woods was positive to the extract of the Brazilian mahogany. The third individual gave no reaction to the extracts. The negative reaction may be explained either by the fact that friction and perspiration do not add their action to the effect of the patch test but do so under actual working conditions, or that the man was becoming "hardened," or desensitized. The reason it is believed the latter occurred was because many of the workers who had developed dermatitis got better although they remained in contact with the wood, and because this man was also getting well despite the fact that he continued working with the wood.

### Recommendations

THE workers were informed that they should wear clean overalls daily and should fasten the legs of the trousers at the ankles to prevent the dust from touching the legs. It was recommended that the men be furnished leather gloves and impervious sleeves.[2] It was suggested that shower baths be installed, and that the employees in the woodshop take baths after work. Exhaust ventilation was recommended on such woodworking machinery as created dust.

Although none of these recommendations was carried out other than the wearing of clean work clothes, the dermatitis outbreak subsided with the advent of cooler weather. This because: (1) the workers were wearing more clothes, and they were protecting their skin from the dust; (2) the workers did not perspire as much, with the result that the wood dust that did get on their skin did not irritate the dry skin as much as it did the perspired, macerated skin (3) it is also to be remembered that many of these workers were becoming "hardened" or desensitized to the dust even during the summer period, and this undoubtedly was an important contributing factor to the cessation of the dermatitis.

During the acute stage of the dermatitis various types of treatment were used. Boric acid ointment and mineral oil seemed to give the most beneficial results.

### Summary and Conclusion

AN OUTBREAK of dermatitis due to mahogany wood occurred in the woodshop of a boat building company shortly after the yard started using mahogany woods from South and Central America, principally from Brazil and Honduras. The peak number of cases occurred during the hottest part of the summer.

A total of 13 cases of occupational dermatitis occurred, characterized by an erythematous, papular, desquamating eruption of the hands, forearms, legs, belt line, and groin. Four individuals were patch tested with Honduras and Brazilian mahogany wood, and three of the four were also tested with extracts of the wood. Two were positive to both woods; one was positive only to the Brazilian mahogany extract and one was negative to both, perhaps because he was "hardened" at the time the patch tests were performed.

Recommendations for clean work clothes, protective clothing, shower baths for the workers, and local exhaust ventilation for the woodworking machinery were given. Other than the clean work clothes, none of the recommendations was carried out, but the dermatitis subsided with the advent of cooler weather, perhaps because the workers wore more clothes and did not perspire as freely, or because those affected were desensitized by continued exposure, or from a combination of these factors.

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## Use of Antigenic Substances

*—In the Treatment of Acute Respiratory Infections—*
*—Preliminary Report—*

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ANY THERAPEUTIC measure which will combat absenteeism which is due to illness, particularly in wartime, should be acceptable. This, of course, with the understanding that no harm or unpleasant symptoms would be incurred by the treatment. Usually new methods of treatment undergo extensive laboratory experimentation before being offered for clinical trial. However, in the use of antigenic substances for acute respiratory infections, the basis of the treatment in our first aid department was derived from the experiments of Drs. Maxwell Palmer and Jerome Andes, of Tucson, Arizona, reported in an issue of *Southwest Medicine*. They reported the use of oral vacagens in treatment of respiratory infections. From perusal of the article it was found that no untoward symptoms or unpleasantnesses were noted.

Our first aid department decided to use antigenic substances for acute respiratory infections during the

The study and observations above described were made in the first aid department of Sharp & Dohme, Inc., Philadelphia, Pennsylvania.

recent epidemic. The method of treatment was eight tablets a day—two before each meal, and two before retiring. In addition to this routine, treatment with acetyl salicylic acid and soda bicarb. was also prescribed. It has been my experience that with the use of systemic treatment alone the length of time lost through acute respiratory infections was from four to 10 days.

In the 71 cases treated with the combined antigenic substances and systemic treatment the longest loss of time due to illness was six days. The cases were not selected as to the severity of the infection, and of the group of 71 who received this treatment there were 17 with temperatures of from 99° to 103°.

There were 27 of the group who lost time as follows: 12 were out one day; four were out one and a half days; three were out two and a half days; two were out two days; four were out three days; one was out five days; and one was out six days.

The others of the group who lost no time continued at their work and developed no symptoms warranting them to relinquish their jobs. Sixty-three of the 71 treated reported marked improvement in from one to three days. Several of these reported marked improvement in 24 hours. Three said their symptoms were aggravated, but, even with that, the symptoms were not severe enough to cause lost time. Five reported no change in the general condition. The method used, as stated, was eight tablets a day—two before each meal and two at bedtime, with plenty of water. This treatment was continued for two days, and a third day if the general condition was not improved. The systemic treatment accompanying this was 5 grains of acetyl salicylic acid and 10 grains of soda bicarb. every half hour for six doses; thereafter every two hours until the distressing symptoms of the infection were relieved.

The usual symptoms were slight elevation of temperature or no elevation, headache, pains and aches through the body, and a dry bronchial cough. As noted, many in the group had no severe symptoms, but it is believed that if the treatment had not been established many would have had more severe reactions and the absentee rate would have been increased. Many of the cases had already been taking antigenic substances for immunization, but apparently the increased dosage gave no unpleasant symptoms, and it would appear that there is no contra-indication in using the antigenic substances for treatment in severe acute infections when the same are being taken for immunization.

Naturally it is understood that 71 cases treated by this method are not enough to warrant clinical approval; but the rapid improvement and relief secured, indicate, to my mind, that the use of antigenic substances is an adjunct in the treatment of the distressing symptoms of the common respiratory infections. It is felt that study along this line, in the treatment of acute infections by antigenic substances, should be encouraged.

The tablets used in treatment were entric-coated ones, containing only the soluble antigenic substances derived from the following organisms:

Each tablet represents the soluble antigenic fraction of:

| | |
|---|---|
| Pneumococcus* (Diplococcus pneumoniae) | 25,000 million. |
| Streptococcus** | 15,000 million. |
| Influenza bacillus (Hemophilus influenzae) | 5,000 million. |
| M. catarrhalis (Neisseria catarrhalis) | 5,000 million. |
| Friedlander bacillus (Klebsiella pneumoniae) | 5,000 million. |
| Staphylococcus (aureus) | 5,000 million. |

* Types 1, 2 and 3.
** Hemolytic, non-hemolytic and viridans.

## The Physiologic Properties of Germanium

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WHEN in 1871 Mendeleeff brilliantly brought forth his periodic table of the elements, there were certain gaps representing then undiscovered elements. One of these gaps was filled by the discovery of germanium 14 years later by Winkler in Germany. Thus germanium is one of the nationalistic elements —germanium for Germany, gallium for France and scandium for Scandinavia.

In 1885 Winkler began work on an unknown constituent of an ore named argyrodite because of its silver content, which ore had been discovered near a mine in Freiberg, Germany. The unknown constituent proved to be elemental, and its properties when determined almost precisely coincided with the properties predicted by Mendeleeff for a metal undiscovered at the time of the prediction.

Habitually, germanium is described as a rare metal. However, if the quantity of germanium wasted in the combustion gases and ashes of coal in the British Isles alone during this present year were collected and marketed at the near-current price per gram, the moneys derived would go far in equaling England's cost of the war for this year. This statement does not apply to the United States where any content of germanium in coal is low or missing. In traces germanium may be found along with other metals in many portions of the world.

So far the uses of germanium in industry have been limited, and chiefly restricted to (1) the electrical industry; (2) as an alloying agent with aluminum for special types of aluminum metal; and (3) as a substitute for silicon in various alloys, such as with magnesium. In medicine germanium has one well known application, namely, the stimulation of red blood corpuscles in various forms of anemia. Germanium is frequently cited as an outstanding trypanicidal agent, but this appears to be the result of error. "Germanin (Bayer-205)," a well known trypanicide, has the formula $C_{51}H_{34}O_{23}N_6S_6Na_6$. This is therefore an ureid derivative and contains no germanium. The association with germanium appears to be solely phonetic. Unlike most substances of prospective increased use in industry, a fair knowledge of the physiologic properties of germanium already exists and awaits the wider entry of germanium into industry.

### Physical Properties and Compounds of Germanium

GERMANIUM is a grayish white metal of crystalline structure, the crystals being octahedral.

| | |
|---|---|
| Symbol—Ge. | Atomic weight—72.60. |
| Specific gravity—5.47. | Valence—2, 4. |
| Hardness (Moh's scale)—6.25. | Melting point—900° C. |
| Volatility—slight at 1500°. | Critical temperature—41.70. |
| Critical pressure—910 atm. | Boiling point—2600°. |

Solubility—aqua regia, hot concentrated sulfuric acid and in some alkalies.

Germanium, along with several other substances, possesses the property of semi-uni-directional transmission of electricity, i.e., it transmits a greater percentage of alternating current in one direction than in the other, which makes it a partial rectifier. The electrical resistance of germanium at 0° C is higher

than most conductors, being 89,000 microhms per centimeter.

Germanium lends itself to the formation of a great variety of both inorganic and organic compounds, including hydrides, hydroxides, oxides, fluorides, chlorides, halides, sulphides, etc. The best known compound is germanium dioxide, which almost exclusively has been used in physiologic experimental work, including the present study.

### The Physiologic Properties of Germanium

PROXIMITY of germanium to arsenic in the periodic table prompted Muller to conceive that germanium like arsenic and certain other metals might act to stimulate red blood cell formation. Accordingly he stimulated investigative work (1922) in certain laboratories, the results from which were not uniform, and controversy ensued. Hammett and his associates reported the ready generation of red blood cells and freedom from significant toxic properties. Others contended that the increased blood counts were apparent and not real, and were to be attributed to blood concentration. The very fact that controversy arose probably has been the factor leading to a quantity and range of inquiry above the obvious importance of the situation. The present day consensus of opinion is that germanium will act experimentally and clinically as a hematinic but not regularly so; is of some value in secondary anemias, but only dubiously valuable in primary states. It has been found that germanium dioxide, the form almost invariably used, can exist in several allotropic forms one of which is highly insoluble and inert.

Without reviewing individual publications and, in some instances, without extending scientific credit by name for disclosures, the outstanding opinions of many authors relative to germanium's physiologic properties are now briefed.

Apart from hypertrophy of the spleen and bone marrow accompanied by augmented numbers of circulating red cells, increase of hemoglobin and increased blood coagulability, germanium is not known to have physiologic properties. In normal persons these actions are observable but do not persist, but in secondary anemias the gains made may be permanent. Since normal persons may be affected, the question immediately arises as to possibilities of those industrial workers exposed to germanium, developing a polycythemia. This possibility appears to have been forestalled, since the blood is reported to possess a maximum saturation point of 0.014% by weight, which means that the average man will not respond to intaken quantities higher than 1 gm. This quantity is without known dangerous properties.

The action of germanium probably peaks about the seventh day after the start of oral intake. This fact imposes some degree of limitation, since in many instances the need for increased numbers of red blood cells is immediate and better may be accomplished by transfusion. In general, current therapeutics place higher values on more nearly physiologic measures akin to transfusion than upon strict chemotherapy as in the case of arsenic, iron, germanium, etc. It is noteworthy that germanium utilized along with other metal hematinics is more active than when used alone.

The white blood cells apparently are uninfluenced by germanium, at least in therapeutic doses. The increase in red cells may on occasion exceed by 70% the numbers found in controls. In venous blood germanium preponderantly is localized in the red cells, while in arterial blood is found in the plasma. It is possibly true that in venous blood germanium dioxide is reduced to germanium monoxide but in arterial blood may be restored to the dioxide form. Being more soluble in plasma, the newly formed dioxide leaves the cell and starts upon a new cycle of change. That portion of germanium entering the body orally and followed by absorption is chiefly excreted by the kidneys starting within 24 hours, but much may never be absorbed and may be found in the feces.

The toxicity of germanium is low whether introduced by mouth or parenterally. Twenty-five centimeters of the unofficial "Liquor Germanii Dioxide Isotonica," which consists of 0.5% of germanium dioxide, may be introduced intravenously two times daily over a period of days without known harmful effects. The dose by mouth is even larger; 10 gm. doses, for the average man, may be expected to be well tolerated. Some authors claim that rats tolerate a dose of 0.7 gm. per kilo, and guinea pigs are only slightly more responsive. Neither in animals nor human beings has any evidence developed indicating a topical action for germanium. Other studies cited in the accompanying bibliography are with reference to the influences of germanium on the course of cancer, infection, metabolism, etc. None is conclusive.

Interpreting all available literature on the action of germanium in the light of possible injury to industrial workers handling this substance, it does not appear that any pharmacological disclosures thus far made constitute any threat in the field of industrial toxicology.

### Present Investigation

NEW work on germanium covered in this publication is limited to three items, namely: (1) Is germanium dioxide capable of inducing proliferative responses akin to those from silicon dioxide? (2) Will buffered germanium dioxide solution induce local skin responses and/or influence erythrocyte counts after skin sorption? (3) Will single subcutaneous and/or intravenous introduction of germanium dioxide solution bring about demonstrable changes in blood cell numbers? Details now follow:

1. The originally proposed name for germanium was eka-silicon, thus reflecting a kinship between these two elements. It was conceived that the experimental application (intraperitoneally and into plural spaces) might induce proliferative changes. The well known Miller and Sayer's technique governed the intraperitoneal injections. The intraplural injections elsewhere have been described by us. Four guinea pigs were injected, each with 1/10 gram $GeO_2$ in suspension intraperitoneally. One each was sacrificed on the 30th, 60th, 90th and 120th day. In no instance did proliferation appear nor any necrotic action. The response may be classified as inert. Two rabbits were injected within the plural space near the base of the lungs. The same amount of germanium dioxide was utilized. In this area in the case of silicon dioxide proliferation promptly appears, and perhaps earlier than in the case of intraperitoneal action. These rabbits were killed respectively on the 15th and 30th day, and no proliferation was disclosed. Within the limits of this procedure it would appear that the relationship between silicon and eka-silicon (germanium) does not include the capacity of the latter to stimulate proliferative tissue changes.

2. A solution of germanium dioxide in physiologic salt solution was so prepared that each milliliter represented 2.8 milligrams of germanium. This solution was buffered with sodum hydroxide until the pH was established between six and seven. Skin contact tests were made with a few drops of this solution, and these

patches were applied on human beings and animals. These patch tests were retained in place 24 hours. At no time did any local irritation appear. In the case of humans, blood counts were made prior to and on varying days after the application. In the case of two rabbits, pure germanium oxide powder was applied as a patch test and was kept in place 24 hours with equally negative results. Any deviation in the blood picture, including the coagulation time, was well within physiologic limits. It was concluded that germanium dioxide when buffered is not a primary skin irritant.

3. For the purpose of determining the blood changes that might follow single subcutaneous injection of germanium dioxide, four rats were injected with varying amounts of the solution earlier mentioned. The greatest quantity so introduced in rats was the equivalent of 10.5 milligrams of metallic germanium per kilo body weight. Numerous blood counts were made before and after the injection. No count represented significant changes. These animals were maintained for a period of about 90 days. During life no indications of abnormality appeared in comparison with their controls, and at autopsy no pathology was established.

At the same time, four rabbits were injected intravenously after preliminary blood counts, using the same solution. The greatest quantity introduced was 25.2 mg. (12.6 mg. of metallic germanium) per kilo. Subsequent blood counts were made, but the wholly negative results do not warrant a record of detail.

While all these results suggest no harmful properties for germanium dioxide, it is well recognized that some of the complex organic compounds of germanium may be highly toxic because of constituency other than germanium.

## Summary

THE general properties of germanium and the physiologic properties of germanium dioxide have been presented. It is established that germanium dioxide is a stimulant of red blood cell formation, particularly when associated with other metals with the same property. In the case of long continued industrial exposure, the prospect of a harmful extent of polycythemia is non-existent, since apparently a critical level of accumulation of germanium is established beyond which germanium is not absorbed or otherwise does not exert its customary action within the body. Germanium has been little used in industry, but its extensive medical application warrants the prediction that its simple compounds will not prove highly injurious.

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FROM historian CHARLES A. BEARD'S new book "The Republic" (Viking, $3), *Life* magazine is featuring, in condensed form, a series of informal conversations outlining the basic facts and principles of the American form of government. The chief figures participating in the conversations are MR. BEARD himself, and a fictitious DR. ROBERT SMYTH and MRS. SMYTH. DR. SMYTH is described as "a neighboring physician who is in charge of health work for a large local factory."

# Tuberculosis and Industry

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THE past quarter of a century is undoubtedly the most important period in the annals of industrial medicine. It is a period which has wrought changes beyond the ready conception of the industrial physician who performed his task in the first two decades of the century. From the restricted function of traumatic medicine to the broad program of preventive medicine is a long step, and those who have participated in the change may well admit that it has been an arduous one to take. It has been well worth it, of course. It has brought us to a point of vantage from which we see the greater progress which lies ahead and from which, if the mood strikes us, we may view our strange and humble beginnings. The evolution we have witnessed could well be illustrated by what has occurred in the control of tuberculosis in industry.

It was evident long ago, as many of us will recall, that among the younger age groups in industry tuberculosis took an immeasurably heavy toll and that it was by far the greatest threat to the earning capacity of the worker. Management, too, had a painful awareness of this fact—largely through the sick benefit associations. The age at which benefits began, the chronicity of the disease, and the number of cases on the benefit rolls produced a drain on the resources of such associations far in excess of any other individual disease. A recent review of 400 cases on a disability roll of a sick benefit association showed 10.51% of the cases were due to tuberculosis. These represent an accumulation over a period of 10 years in a plant with an average population of 15,000 workers.

It cannot be said that no effort was exerted to meet this problem. To be sure, well planned and persistent programs were in most places conspicuously absent. But, here and there attempts were made to reduce and control this enormous man-hour loss. We began in our own plants to examine workers prior to their resumption of work after absences due to upper respiratory diseases. Occasionally, a patient who had suffered from what had been assumed to be a simple bronchitis was found to be tuberculous. Then, too, in those early days, we placed great emphasis on the factor of weight. Bulletin board posters stressed this point alone. Foremen were instructed to send to the medical department for examination workers who were losing weight. At infrequent intervals these men were found to be victims of the great plague. Obviously, the early efforts were elemental and crude, but they prove, at least, that the threat was recognized and that something was being done about it.

It must be remembered, moreover, that in these early years fluoroscopy and roentgenography were just beginning to enjoy a widespread use. The periodic examination was still largely an unrealized ideal and record systems were more or less haphazard. Inevitably, many cases were detected so late as to preclude the possibility of recovery. Other difficulties were experienced in the care of these patients. The fear and prejudice against the sanatoria were both general and deep. Entrance into these institutions carried a stigma from which the patient had little hope of ever escaping. Besides, the sanatorium was widely considered not as a significant aid to recovery but as the repository of broken lives about to be ended. Commonly, few people associated hope with sanatorium care; to many it simply meant the close approach of a fatal issue.

Overcoming this prejudice among industrial employees was one of the essential and monumental accomplishments of the early worker in tuberculosis. And it was a real educational effort. Our own plant was made an induction center to the sanatoria. Our contacts with the State Health Department of Pennsylvania were intimate and effective. We were supplied with adequate records for the cases we succeeded in placing in the sanatoria and we were, as a result, in a better position to afford needed help in the rehabilitation of cases which recovered. Our interest in the cases was an all-embracing one. To begin with, we did our utmost to popularize the sanatorium. We were enthusiastic in our commendation of institutional care wherever we discussed the patient's problem with him individually or with members of his family. We prepared literature in which we extolled the virtues of the sanatorium in promoting earlier recovery and in protecting the patient's family as well. We used all the assistance we could procure in the form of publications issued by the National Tuberculosis Association. Photographs of the three sanatoria in Pennsylvania were used to visualize in the employee's mind the advantages of accepting the opportunity for sanatorium care. We followed up this preparatory work by making periodic visits to patients who were institutionalized. We helped, whenever possible, in eliminating some of the vexations which beset the worker suddenly removed from his accustomed routine of living and plunged into the strict regime of enforced rest and prolonged relative isolation. We believe that many workers returned to normal life again because these efforts were made. It also aided us greatly in placing these individuals at suitable work.

The work continues, to be sure. Both through formal study and in casual contact with our workers, the attempt at prevention and at the restoration of health goes on. The periodic examination is one of the forms which this effort takes. At our East Pittsburgh plant about 5,000 employees are examined annually on a compulsory basis from an occupational standpoint, and early cases are at times detected. The recognition is becoming more general among our workers that the periodic examination hides no ulterior motive and that it constitutes a vital health measure which conceals no threats to job security. But, before terminating our discussion of our earlier work, we should mention a survey made in 1933 of some 450 foundry workers, since this study touched upon a question whose interest and importance remain undimmed. The time when this investigation was made was, as you will recall, a period of silicosis hysteria, when the foundry was considered by some a rather effective route to a state of silico-tuberculosis. It was of great interest, therefore, that not one of the 450 men studied showed any evidence of active tuberculosis. Some 14% did show evidence of arrested tuberculosis infection but none had to be removed from his work. We explain this experience on the basis of (a) careful pre-placement examinations, (b) education on tuberculosis prevention, and (c) the placement of cases in sanatoria or at home for treatment at the earliest possible moment.

Our present efforts in tuberculosis control may be briefly discussed under the headings of the pre-placement examination, the periodic and transfer examination, the care of cases actually found, the study of the sick case resuming work, the casual examination requested by the interested worker, and our program of health education.

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The pre-placement examination opens to us what is probably the most fruitful opportunity to control the hazards of tuberculosis in industry. Here the suspected case is either thoroughly studied and carefully placed or he is haphazardly placed into a type of work in which latent tuberculosis lesions will flourish into full activity. Here, also, is the point of entry for the frankly tuberculous undetected by a hasty and incomplete examination, or here we find the protective wall which the industrial physician interposes between the workers already employed and the tuberculous individual seeking admission among them. We must insist, at this point, that we are not unmindful of humanitarian considerations. But it is a regard of dubious worth both for the healthy worker and the tuberculous applicant to place the two together. The tragedy of such misguided sentimentality is too clearly recognized to warrant even mention. To be sure, the arrested case must be dealt with on its peculiar merits, and every consideration given to proper and safe placement as well as to systematic follow-up after employment.

The periodic examination I consider second in importance in the discovery and proper disposition of the tuberculous case. While it is true that frequently such examinations are limited to those forms of employment where the menace of toxic hazards obtains, it is likewise true that among the thousands of workers subjected to this examination an appreciable number having active tuberculosis may be found. These cases are foci for the dissemination of the disease not only among workers at the place of employment but also among the many inevitable community contacts. We have ourselves found in the past several years an incidence ranging from one and one-half to two cases per 1,000 employees. Since the periodic examination is performed at regular intervals, these cases are generally found while still in the early stages of the disease. Hence their discovery has both great importance for the individual affected as well as for the group exposed to his presence. This is one of the reasons upon which the general provision of periodic examinations for all workers might be urged. For, important though it is in the control of the hazards of toxic exposures, it is equally valuable in the control of the health hazards which generally plague mankind whatever the character of its vocational pursuits might be.

THE transfer examination, though far more limited in scope, represents another opportunity for the discovery of the disease. Such examinations are usually limited to a survey of the particular physical requirements of the job to which the worker is transferred. Yet, it can be readily extended to include some inquiry into possible pulmonary pathology. If this approach be indirect and largely unsystematic it need nevertheless not be without significant value. Whatever the circumstance leading to the discovery and adequate care of the tuberculous might be, the importance of such discovery and such care remains the same. We should, in fact, urge it as a principle worthy of general adoption that any opportunity which presents itself for the physical examination of any worker should be considered an opportunity to find tuberculosis and to exert every possible effort against its spread. So strongly are we committed to this principle that we advocate careful examination—not excluding x-ray films if they appear necessary—in every case of absence due to severe upper respiratory infections. For it is well known to all of us that many an apparently innocuous case of bronchitis on closer scrutiny has revealed its tuberculous nature.

Only part of our work is done with the discovery of cases. The mere cataloguing of records is an academic gesture if proper care for the cases found is wanting. Reference has already been made to the receding prejudice against institutional treatment. Sanatorium treatment will unquestionably gain progressively in popular esteem and provision for such care will be greatly increased in the future. However, in those cases where treatment is carried out at home, there should be a well-planned program of supervision in the conduct of such treatment. Medical management is basic, of course. But some supervision of the physical setting of the household coupled with actual demonstrations of procedure should be an excellent adjunct to medical care, and can well be considered a legitimate phase of public health nursing. Already, such nursing aid is available to some degree. It should undoubtedly be extended so as to become a part in the management of all cases which are confined to their own homes.

No plan for tuberculosis control is complete unless education on the subject is continuous and has been made a large part of the program. There is much skepticism in some of the workers as well as in management of the value of educational measures. Yet no one is willing to deny the insurmountable difficulties which obstruct efforts to prevent disease where ignorance of the dangers and of the protective possibilities exists. We should probably divorce education as we think of it in industry from the purely scholastic training exercises which do not always bear an obvious relationship to practical needs. Our concept of health education is one closely allied to tangible and widely recognized need. The objective of such educational effort is to impart information which will function practically in the immediate routine of our common daily life.

There are many forms which the educational program may take in addition to individual contacts. Posters, lectures, films, articles in plant publications and other literature may be utilized. It has been our custom for a great many years in our yearly Health Education Program to bring to the attention of our workers the necessity of early diagnosis of tuberculosis. And in this respect we have taken advantage of the help which has been given to us by our local Tuberculosis Association which has provided us with literature and displays during the period of Early Diagnosis Month each year. On the whole, it appears that brief, simple and attractively illustrated leaflets meet the criteria of acceptability and feasibility. Many formal approaches—such as films and lectures—entail great difficulties among which time loss, special personnel, equipment, and place are among the more serious. On the other hand short publications which are interesting, readable and scientifically accurate may be effective in conveying to the worker a vital health message. To the criticism that many workers will not thus be reached because of neglect of these publications or indifference to them, we may reply that any disinterested person would be difficult of approach regardless of the means used. Moreover, repeated issue of such material will gradually find a place in the reading of a substantial portion of the recipients. Despite the fact that any educational procedure will never be more than partially effective it is necessary to continue to educate if any improvement in general health practices is to be attained.

Because we are committed to this philosophy we published last year a series of eight leaflets on the subject of tuberculosis. The topics covered were:

1. What is Tuberculosis?
2. War and Tuberculosis.
3. Do I Have Tuberculosis?
4. How the Doctor Diagnoses Tuberculosis.

5. Infected Sputum Spreads Tuberculosis.
6. Hygienic Living Protects from Tuberculosis.
7. Good Nutrition Helps Prevent Tuberculosis.
8. The Modern Treatment of Tuberculosis.

The issuance of these leaflets at a time when the stresses of war threaten even more than the usual ravages from this disease lends the quality of timeliness and pertinency to our health education program. The number of requests we have received for the material attests to a widespread recognition of the desirability of health education for the laity.

Tuberculosis is only one subject out of many which demand treatment. A well coordinated and continuing program is necessary. It may well be assumed that the results will be well worth the effort and the cost even if a measured monetary value cannot be accurately attributed to the ensuing good.

SO FAR our discussion has dealt with practices as they affect large groups and we may well be reminded that the problem of tuberculosis is one of individual as well as of social concern. It would, therefore, be of interest to review an illustrative case or two of recent origin picked from our files to indicate the fate of other similar individuals in whom the disease was found.

Our first case is that of a young woman of 26 who had been employed by us in a clerical capacity. This employee presented herself to the medical department in October, 1941, with the complaint of severe pain in the right chest. An x-ray was taken at once but no pathology was detected. She was sent home with instructions to consult her family physician and the latter hospitalized her for study. No diagnosis was reached even after a period of two weeks during which she was observed under controlled hospital conditions. She returned to work and again later we took chest x-rays. On these films there was evidence of a peripheral involvement of the right upper lung, and a diagnosis of minimal A tuberculosis was made. In January, 1942, she was admitted to the State Sanatorium where she was confined for 14 months, the first six of which were spent in complete bed rest. Following her sojourn at the sanatorium she was considered a healed case of tuberculosis and she was permitted to return to work. She performed the duties of her job without difficulty and decided, one month after her return, to apply for membership in the Women's Army Corp. She passed her physical examination and was accepted. Among the noteworthy facts in this case is the establishment of a diagnosis of tuberculosis only through careful study and observation. A superficial survey of this case would certainly have failed to reveal her true condition until such time as her lesions would have advanced to the point of frank and total disability. Should diagnosis have been delayed so long, obviously, the course of this case might have had an unnecessarily tragic termination.

Our second case is that of a young man who reported to the medical department for a routine periodic examination. Chest examination revealed a questionable area at the upper left apex. A detailed history was obtained and among the salient facts disclosed was a progressive weight loss amounting to about 20 pounds in a period of approximately three months. The general physical findings with the exception of a temperature of 99° were largely negative. Chest x-rays, however, revealed an incipient tuberculosis. He was advised to enter a sanatorium and was admitted a few weeks following the original examination. He remained at the sanatorium for six months at the end of which time he was declared healed. Upon advice of the attending physician he remained at home, virtually at complete rest, for two additional months. Shortly thereafter he was well able to resume his work without symptoms or signs of the disease and a gain of 22 pounds. Recently he was inducted into the army and is now in service. Again we illustrate the desirability of early and thorough study.

It would be possible to cite cases found in the advanced stages of the disease in which the outcome was far less favorable. But it seems appropriate to emphasize unremittingly what is possible of accomplishment with adequate and early medical care.

In any attempt to outline the major procedures in the tuberculosis program of an industrial plant some details must always be evolved on the basis of the specific needs and potentialities. Thus it has been considered more logical to discuss the general problems that may well arise anywhere. There are certain conclusions which we may draw from this discussion and, inasmuch as they constitute the essence of this paper, they may be mentioned at this point by way of summary. These conclusions are submitted, at the same time as recommendations of procedure.

1. The pre-placement examination should include a careful study of the chest. Fluoroscopy and roentgenography should be done routinely on all applicants.
2. Periodic examinations should repeat the complete study of the pre-placement survey and should also include x-ray films of the chest.
3. Systematic health education programs should be conducted giving due emphasis to the subject of tuberculosis at regular intervals so as to maintain the worker in a state of alertness relative to the disease. Health education material should be so distributed as to reach the family of the worker.
4. Careful and adequate follow-up of all cases, by competent agencies, should be insured. Industry should assist in the placement of cases discovered among its workers, and should aid in pursuing the follow-up measures required.
5. The rehabilitation of the arrested case should be an important objective of industry in its follow-up. Thorough job analyses should be made available to aid in the proper placement of the many cases which return to employment. It is the one indispensable measure in the prevention of recurrences.

We are not in the realm of untested theory when we propose these recommendations. They have been tried and found to constitute our most effective approach to a solution of the problems of tuberculosis in industry. Perhaps, as health measures and as health knowledge improve, the battle against tuberculosis will bring nearer the victory which mankind has sought so long. We are undoubtedly contributing to the defeat of this ancient enemy when we continue the assault against him according to the strategy we have just described.

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## Endocrine Disorders

*— and Low Back Pain —*

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IT IS SAID that endocrinologists are prone to study endocrinopathies *per se* and that they sometimes overlook other disorders that may at the same time victimize the patient. The converse of that idea is undoubtedly true. Workers in other fields of medicine tend to overlook endocrine disorders or to recognize them only after treatment of some other syndrome has failed to bring relief to the patient. Perhaps all of us would do our jobs better if we kept in mind the very

obvious and well known fact that a patient may have two or more disorders and that these need not necessarily have any causal relation. Perhaps we should go a step further and as a general rule employ the simplest therapeutic procedures first.

The case histories submitted herewith tend to illustrate these ideas.

MRS. W. T., aged 39, was referred by the late DR. PHILIP H. KREUSCHER February 28, 1940, because of obesity. She also complained of backache which began after a strain at the age of 18. It was less marked during pregnancy and was greatly aggravated by fatigue. For the backache she had consulted two orthopedic surgeons before she saw DR. KREUSCHER. All had agreed that it was probably due to a displaced intervertebral disc. Operation has been advised.

Pre-menstrual polyphagia was marked.

About the age of 20, she said, fatigue has caused numbness and tingling of the fingers and tongue, blurred vision and headache.

Recently her teeth had required a great deal of repair work.

Her B.M.R. had been minus 34 in 1935 and minus 14 in December, 1939.

Thyroid, even in small doses, she said caused headache—a sign of hypopituitarism—heart consciousness and constipation.

Her menstrual history was normal except for amenorrhea of four months' duration when she was in the tropics in 1938.

She had four children but had been able to nurse only the first—another sign of hypopituitarism.

Her family history was not significant.

Examination showed: Temperature 98; pulse 80; weight 233 pounds; height 5 feet 7¾ inches; blood pressure 95/65. Her obesity was of the pituitary type. The reflexes were sluggish but otherwise normal. Pelvic examination by a competent gynecologist was reported as normal.

Kahn and Wassermann tests were negative. The blood count and urinalysis were normal. Blood chemistry showed non-protein nitrogen 20.7, uric acid 2.2, cholesterol 207 and sugar 106.9 mg. After 100 grams of glucose the blood sugar was 142.8, 104 and 60 mg. per cent at one-half, one-and-a-half, and two-and-a-half hour intervals. The B.M.R. was minus 9. She took 10 units of obstetrical pituitrin with no reaction except very slight cramps and pallor and the blood pressure rose to 105/80.

She was considered to be a victim of hypopituitarism and hypothyroidism. Treatment consisted of a low calorie diet, two grains of thyroid per day and posterior pituitary one-fifth grain three times a day. Injections of anterior pituitary extract and posterior lobe extract were given each time she came into the office which was infrequently.

Her blood cholesterol slowly declined as follows:

| | | |
|---|---|---|
| 2/29/40 | 207 mg. | Wt. 233 pounds |
| 5/ 3/40 | 196 mg. | 209 " |
| 6/28/40 | 184 mg. | 205 " |
| 8/ 6/40 | 128 mg. | 202 " |

September, 1940, she reported that she had the best summer for many years and by December, 1940, she reported that her backache had disappeared. It has never since recurred. Her greatest loss of weight was 31 pounds.

MISS G. L., aged 34, came in March 20, 1943. She complained of:

Weaknes and pain in her lower back. This had been present since an attack of "sciatica" in 1934 or 1935. The pain was worse on stooping and bending to the left and radiated down her left thigh which felt weak. The pain was so easily elicited and so severe that she had difficulty in carrying on as a teacher.

Obesity of many years' standing. She had gained steadily for several years.

Irregular and scanty periods occurring at intervals of one to four months.

Headaches, frequent and severe.

She was sensitive to cold but had noted no mental retardation.

Except for the sciatica, which was not well described, there was nothing of significance in her past history. The menstrual periods began at 15 and were regular and painless until about age 20. Since that time they had occurred irregularly, as already noted.

One sister was overweight. Her mother was 5 feet 7 inches in height and had diabetes.

Examination showed height 5 feet 9¼ inches; weight 224 pounds; temperature 98.6; pulse 90; blood pressure 145/90. Scoliosis was present in the lumbar region. The reflexes were active but within normal limits. Except for the obesity there were no other significant findings.

The B.M.R. was plus 13. Fasting blood sugar was 83.0 mg; after 100 grams of glucose it was 85.7 and 93.7 mg. per cent at one-half and one-and-a-half hour intervals. Blood uric acid 2.5; cholesterol 156.3; calcium 9 mg. Blood count and urine were normal. Kahn test was negative.

The x-ray report was as follows:

"Problem: Pain in the lower back and in left hip region with radiation down left leg.

"Findings: The examination included the lower dorsal vertebrae as well as the lumbar and sacral region. There is no abnormality of vertebral body or interspace until we reach the fourth lumbar, and there we find a definite narrowing of the interspaces between the fourth lumbar and the fifth, and between the fifth lumbar and the first sacral segment. There is evidence of sclerotic change in the bony structures in this vicinity also, giving the typical aspect of osteo-arthritis in the fourth and fifth lumbar and first sacral regions. There is no spondylolisthesis. One should think of the possibility of a compression of the fourth and fifth intervertebral discs with some posterior protrusion into the spinal canal. It is not possible definitely to state that from the x-ray findings alone without the use of opaque oil or some other contrast substance, but it is presumed that such a protrusion may have taken place when we see such intervertebral space narrowing. There is no spondylolisthesis.

"The sacroiliac joints appear to be normal.

"The left hip joint is normal, and the femoral neck is normal.

"Summary: Spondylitis deformans, especially in the lower lumbar and first sacral region. Narrowing of intervertebral spaces. Presumptive posterior protrusion of some intervertebral disc substance could explain the left sciatic radiation of pain."

From an endocrine standpoint she was thought to be the victim of a pituitary-thyroid-gonad dyscrasia.

Treatment consisted of a reduction in caloric intake; thyroid two grains per day; obstetrical pituitrin five units and anterior pituitary extract 0.5 cc. twice weekly.

In the first month she lost 2½ pounds and her backache greatly decreased in severity.

In the second month she lost 11½ pounds and her backache disappeared.

Her periods have not yet been established at regular intervals, but she is free from any discomfort in her back and headaches seldom trouble her. She now weighs 192½ pounds.

MRS. M. A., aged 40, was first seen July 7, 1943. She complained of exhaustion which had been constant and severe since Christmas, 1942, and tachycardia with a sense of suffocation since June, 1943. This had

followed the taking of large doses of thyroid for a month, i.e., 9 grains per day. During that period she lost 15 pounds in weight but her nails were less brittle and her hair less dry. There had been some diurnal somnolence before the thyroid was taken. The history indicated probable attacks of paroxysmal tachycardia before she took the thyroid.

Later she mentioned pain in the left leg and sometimes in the right, and that she could not fully extend the left thigh when she was lying down. These conditions had been present since a fracture of the pelvis in 1937. Later she spoke of paresthesias of the hands and arms.

Following her injury, which was due to a horse falling on her, she had had competent care in a good hospital. After recovery she had consulted two surgeons of national reputation because of pain and limitation of motion in her legs. They had both told her that nothing could be done and that it was a disability she would have to accustom herself to living with.

X-ray reports regarding her injury were as follows:

"7/20/37. Film made of the upper femur showed no pathology. Film made of the pelvis showed fracture through the right ischio-public ramus, one fracture at the junction with the ischial tuberosity and one at the junction with the symphysis pubis. There appears to be some separation of the pubic bones at the symphysis. There is an unusual appearance of the acetabulum on the left side, most of which I believe is due to a slight rotation distortion. The possibility of there being a stellate fracture into the acetabulum must be considered, however.

"3/15/39. Film made of the pelvis and lower lumbar spine in a-p and lateral directions, the former stereoscopically, showed evidences of the old fracture in the right ischio-pubic ramus, distortion of the pubic joint and periostitis along the inner margin of the left ileum secondary to the old fracture in that region. There was also decrease of the left hip joint space with many localized radio-lucent areas in the head of the left femur.

"Roentgen diagnosis: Old fracture of the right ischiopubic ramus and of the left acetabulum. Disruption of the pubic joint. Degenerative arthritis of the left hip joint."

She had typhoid at the age of 12, ectopic pregnancies in 1936 and 1938, shingles in 1940 and 1941, and the fractured pelvis mentioned.

Her menstrual periods began at 12 but were not regularly established until the age of 30. Prior to that age they occurred at intervals of two to four months.

She was 5 feet 6½ inches in height and weighed 165 pounds. The obesity was of the pituitary type, and the physical examination disclosed no other significant findings.

The B.M.R. was normal. The glucose tolerance test showed fasting sugar 90.9 mg.; after 100 grams of glucose, 115.4, 96.4 and 90.9 mg. per cent at one-half, one-and-a-half, and two-and-a-half hour intervals. There was no glycosuria. The blood uric acid was 2.4 mg., and the cholesterol 147.9 mg. The blood count was normal. The urine showed a trace of albumen.

After the injection of 0.5 cc. anterior pituitary extract she felt markedly better. The exhaustion was relieved for several hours.

It was considered that from an endocrine standpoint she suffered from pituitary and ovarian deficiency with a secondary thyroid involvement. Treatment consisted of two grains of thyroid per day with injections of 0.05 cc. anteror pituitary extract, 0.5 cc. obstetrical pituitrin and 1 cc. of ovarian residue twice a week and a moderate restriction of the caloric intake No consideration was given to the pains in the legs or her inability to extend the thigh.

Her symptomatic improvement began immediately. Wthin a month she said she was able to do more work in a day than she had previously in a week. December 4, 1943, she reported that she was able fully to extend the thigh and that the pain in her legs had disappeared. Her improvement continues to this time.

In presenting these few cases there is no intention of making any claim that endocrine disorders are usually or even often responsible for or associated with backache. They do emphasize, however, the need to remember that a patient may have two or three disorders at the same time. How these react one on the other or what cumulative effect they may have, it is often difficult, if not impossible, to determne. When major operative procedures are contemplated, the outcome of which is somewhat uncertain, the possible presence of endocrine disorders should be considered.

## Personality Problems in the First Aid Unit

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THE PROBLEM of absenteeism has become one of the most discussed aspects of industrial wartime adjustments. This attention is due to the urgent necessity for maximum conservation of man-hours. If, then, time is so vital a factor it might be well to consider other ways in which time losses could be decreased. The loss of time involved in frequent trips to the first aid unit does not compare with that lost by a day's absence, yet if these trips are useless the cumulative loss of the time can approach serious proportions. With this in mind, the comprehensive work done on absenteeism has been reviewed to see what factors are common to both methods of time loss.

According to Selling[1] the findings of labor research tend to show that 20% of the employees account for 100% of the chronic absentees. This correlates with Giberson's findings[2] that one man out of every five employed in industry could be helped by psychiatric assistance. The severity of the problems these people represent ranges, as Brown[3] has pointed out, from the unrecognized cases of borderline insanity to essentially normal people who have been overstrained by added stresses in their lives. It is this very spread of the problem which tempts neglect of it. Like water it runs everywhere. A severe accident is tabulated as such for statistical purposes, yet may have its actual origin in a personality problem. Wittmer[4] cites the case of a man who, owing to carelessness resultant from home worries, lost his arm in a machine. He points out how the cooperation of an alert foreman could have prevented the catastrophe. In stressing the role of the foreman or other supervisory employee, he strikes at what seems a major bottleneck in getting the psychosomatic approach into effect in dealing with the industrial worker.

The prolonged and overly publicized mass tension states which exist between management and worker groups do have an unfortunate effect on the medical personnel who must, as Dwyer[5] aptly puts it, "make the unquestionably difficult attempt to 'Service both God and Mammon.'" The industrial physician is in a peculiarly complicated and hazardous position, with responsibilities not only to the individual patient but also to society as represented by the organization as a whole. Seldom does the danger

grow as acute as in the two cases cited by Meyerding[6] of physicians shot by disgruntled employees. Frequently it must result in a course of compromise, since the physician's own security is threatened by the hostility of either union or management.

The unstable employee can utilize this particular form of tension as a means of expressing deeper and more personal difficulties. A case in point well illustrates this. It is an almost universal policy in plant first aid units to have minor abrasions, gastric distress, headache and the like cared for by a nurse, reserving the attention of the physician for more serious conditions. The gain resultant from prompt treatment of the most minor injuries need not be explained here. In one area it was discovered that neglected injuries were appearing at the field hospital. The workers presenting these were very willing to state that the reason for the neglect was that the manner of reception accorded them at their first aid station was such that they would not submit to it. The same nurse who so repelled her patients was proving a problem by continually stirring up interpersonal friction within her department. The cause of the personality problem in her case was easily found. She was married to a psychopath of marked infantile and hypochondriacal behavior who had gone through several stormy years of trying to get permanent compensation for a traumatic neurosis. Her impatience with her ever-complaining husband tended to overflow into irritation at any demand on her attention. Her constant domestic embroilment overflowed into provoking quarrels with any and all fellow workers. At the same time she was able to utilize her union membership, not shared by others in her department, as a protection against the consequences of her behavior, thus using a prevailing social conflict as an expression of her own internal conflict while, at the same time, by so doing, she was augmenting that social conflict.

Such an example serves to show the hiatus between what we can actually expect in many cases from employees in key positions and the ideal expressed by Wittmer,[7] Hedley,[8] and others. One could not expect the individual described above to benefit by a smattering of psychiatric concepts, which could on the other hand be expected to give her more potent means of wreaking her hostilities on those in her environment. The delicacy of adjustment in any human mental mechanism vastly exceeds that of the most elaborate power machine, and the relegating of psychiatric practices of any degree to the untrained is mentioned only to be condemned as a practice which will inevitably lead to the abandonment of any attempt at utilizing psychological approaches. It is enough for the foremen, nurses, *et al*, to recognize that the worker who is chronically tired, irritable, clumsy, or otherwise an exception to average behavior, is in need of help which should be available through the medical department.

IT IS NOT always easy to demonstrate in dollars and cents to two decimal places what this can mean to the company and its insurance carrier, but, again, analysis of typical cases is indicative of what can be expected.

Here is a 39 year old married worker with a very suggestive history, as gathered from first aid records. Between January 1 and June 1 of the current year he made five trips to first aid for minor injuries. In June he lifted an ordinary weight and complained of a lame back. Twice he was given infra-red to his back, 20 minutes each time. Note that this represents at least an hour lost. After that for 16 days he was sent a distance of six miles for diathermy treatment. In these days of tire and gas shortage, that represented approximately 200 miles of driving. It would be extremely conservative to estimate his time lost in those 16 trips as two full work days. The significant part of the story is what he told incidentally while having one of his last treatments. A physician with no jurisdiction over the patient took occasion to question him, because his prolonged treatment provoked curiosity. The man did not hesitate to tell a sympathetic listener that he had plenty of home troubles.

In the absence of any recorded objective findings or history of significant physical stress a workman gradually obtained relief from a prolonged and expensive treatment which allowed him daily relaxation. He gives a brief history of domestic troubles. To understand this, we turn to the exhaustive treatise of Dunbar.[9] After a discussion of the extensive work of Mohr, Levy, Joseph, and many others, we come to the significant passage, "The fact should be borne in mind that changes in muscle tonus are among the most frequent mechanisms of psychic expression, and that (whether they be primary or whether they develop as a reaction to a local somatic disturbance) they are amenable to psychotherapy or methods of relaxation. This point is particularly stressed here, in view of the fact that although it is precisely the psychic component which is amenable to therapy, this component is generally overlooked, whereas therapy is instituted for all other possible (still hypothetical) factors."[10] A significant corollary to this is the finding of Levy (as reported by Dunbar) that muscular or articular "rheumatism" is one of the most frequent diagnoses met in the practice of socialized medicine.

The foregoing serves to highlight the case of a woman worker, age 22, single, who similarly complained of muscle and joint involvement without physical findings. She had first been seen for a back complaint, and two infra-red treatments. In a matter of three weeks she was back with an arm complaint and received four diathermy treatments. The next time it was the ankle and six treatments, all this time without any findings to account for the subjective symptoms. Then a change of personnel introduced the psychosomatic approach. She came in complaining of the knee. When nothing was found to account for this, a brief history was taken showing the factors of worry about home conditions and inadequate sleep. She was given encouragement but no treatment, and told to see her family doctor (in accord with the established policy of not infringing on private practice). Within a matter of days she was back with increased complaints. Her family doctor had told her the familiar "there is nothing wrong" which so routinely dismisses the neurotic. This time a thorough history was taken. The whole procedure involved about an hour of company time. It was discovered that the patient was the only child of an asthmatic mother and a father disabled by severe organic disease. The repeated trips to the first aid unit coincided with a particularly bad time in her father's illness. There was a history of previous treatment for "a touch of ulcer," and of a social life marked by overly strong family ties and paucity of other interests. She was given a simple explanation of how emotional strain could cause muscles to tighten painfully, and was allowed to unburden herself of the prolonged worries for which she had not had any previous outlet. Before the session was over she ap-

peared much relieved and went willingly back to work. She has not found it necessary to return to first aid.

THESE CASES illustrate some simple procedures which can be applied to reduce materially the time losses occasioned by unnecessary trips to the first aid unit. In the first place, too much responsibility must not be placed on foremen and nurses. In any case of doubt it is much better for the foreman to be overly generous in his sending in of employees. Wittmer's case shows that. The nurse, whose whole training has been *not* to diagnose, should not be expected to evaluate cases for the doctor. The desirable nurse will shrink from a task she has been schooled to avoid. The nurse who welcomes such responsibility may be working through personality problems of her own and thereby adding to the confusion, as was illustrated by our first case.

Much misspent effort could be saved and some major difficulties prevented if it were a fixed policy that employees who make more than three trips to first aid in any two months be seen by the doctor regardless of the triviality of the complaint. This would, in many cases, focus attention on the accident prone individual before disabling accident occurs. The doctor should see routinely any case, however trivial in appearance, in which the gross lesion is not on par with the complaints. This will give opportunity for the detection and amelioration of the ever-increasing number of psychogenic complaints.

Unfortunately for the success of this last it is necessary that the plant physician have an adequate psychosomatic orientation and psychotherapeutic technique. Not only must the doctor be able to establish a positive diagnosis, not by exclusion, and to gain the patient's cooperation, but also to utilize the knowledge gained in suggesting a placement which will help not only the worker but likewise the organization. In short, the physician must have mastered the principles of industrial therapy. It is necessary for the industrial physician always to remember the dictum of Campbell[11] that "Industry turns out two main commodities, material goods and human satisfactions." The more profoundly the physician understands how to advise the placement which will give a maximum of the human satisfactions for his worker-patients, the more material goods will be produced.

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## American Association of Industrial Physicians and Surgeons

CONSTITUTION and By-laws Amendments proposed to be voted upon at the Annual Meeting to be held at St. Louis, Missouri, during the 1944 convention, May 10, 11 and 12, 1944.

### Article III—Membership

SECTION 1—(remains the same).

SECTION 2—(new amendment):

"To be eligible for *active membership* in the Association, the applicant must be certified as a member in good standing of his respective county medical society, and shall have had at least five years' experience in the practice of medicine since graduation from internship, at least three of which must have been in the field of Industrial Medicine and Surgery, during which three-year period, 50% of his practice was in that specialty.

1. That this regulation be not retroactive.

2. That an applicant with exceptional qualifications and experience may justify the above rigid rule being waived and his application approved by the Membership Committee, i.e., applicants taking prominent positions, or outstanding specialists doing some industrial work, probably not 50% of their practice.

3. He shall be acceptable to the Regional Component Industrial Medical Society where such exists."

SECTION 3—(new amendment):

"Physicians who have the personal and professional qualifications for active membership but who are not eligible to this classification due to an insufficient period of time having elapsed since graduation or whose percentage of practice in Industrial Medicine and Surgery is not adequate, may apply for *associate membership*. Such applications shall be acted upon through the same procedure as active members.

"The above restrictions may be waived by action of the Board of Directors."

Present Section 2 to be changed to Section 4;

Present Section 3 to be changed to Section 5; and

Present Section 4 to be changed to Section 6.

### Article IV—Fellowship

DELETE present Section 1. DELETE present Section 2.

SECTION 1—(New amendment):

"Active members after *five* years of membership and who have made some definite contribution toward the advancement of Industrial Medicine and Surgery, or who have performed some special service for the Association, may apply for Fellowship."

### Article V

DELETE Section 6 of Article V entirely.

## Industrial Nurses

THE SECOND Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL NURSES will be held in conjunction with the Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, May 12, 13, and 14, 1944, at Hotel Jefferson, St. Louis, Missouri.

The program, beginning on Friday, May 12, will feature joint sessions with the industrial physicians and surgeons, and round table discussions by industrial physicians and nurses, emphasizing "Post-War Planning for Nursing and Medical Services in Industry." The Association's Board of Directors will meet Friday evening.

On Saturday, May 13, the general business session will convene at 9:00 A.M., with CATHERINE DEMPSEY, President of the Association, presiding.

At luncheon, MILDRED O'CONNELL, President of the St. Louis Industrial Nurses' Club, will extend the greetings of the local organizations.

In the afternoon, beginning at 2:00, there will be four 10-minute papers, followed by a 20-minute discussion of each. "The Young Nurse in Industry and Her Future" will be presented by a speaker from the Chicago Industrial Nurses' Club. "How to Develop Leadership in Industrial Nurse Groups" will be the subject of the presentation from the Ohio Industrial Nurses' Club. Other topics will be offered by representatives of the Los Angeles Industrial Nurses, and the Tennessee Nurses.

At 4:00 o'clock there will be a round table discussion on industrial nursing problems; at 5:00 the Association will elect officers for the coming year.

The dinner meeting at 7:00 will round out the day; and on Sunday, May 14, a general business session and a meeting of the Board of Directors will be held.

Industrial Medicine
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## American Scene

THERE is something in the air, and it is more than the breath of Spring. If the scientists should seek to measure it, in terms of parts per million, they would find it having to assert itself in an atmosphere still polluted with poisonous miasmas and stupefying dusts —the one relict of years of politically ambitious propaganda; the other a hangover from the impacts of a decade of artificial emergencies. Such an atmosphere, of course, is also pervaded with unrest, resentment, distrust and dissatisfaction. It must be a pungent essence, therefore, to reach the senses, in competition with the perception-dulling burdens of the very breeze that wafts it along. But pungent it is; and the great American Spirit smells it and stirs to awareness, like a giant awakening from a long stupor. There isn't a name for it yet, unless the psychologists have a term for that combination of interest and curiosity, *un*satisfaction and disgust with which an increasing segment of the public—back on the job of guarding its liberties after the recess of a long emotional debauch—is now contemplating the national picture. Possibly, however, we may call it the essence of the persistent and indefatigable "why?" At any rate, it is setting more people to thinking, and making more people articulate, to the end that the dusts and vapors of the past may be blown away, and the postwar years to come be as constructive as the war years now are being the opposite.

Expressions of this are evident on every hand. For example, the growing volume of letters to Congressmen wanting to know *why* the overburden of expense for unnecessary government agencies, bureaus and activities; the mounting number of inquiries as to *exactly what* does "social security" mean, now that it is admitted that the wage deductions collected by the Treasury are not a trust fund for those who pay them in (as they were led to believe) but only additional revenue of the government; the growing determination of the people and their representatives to look behind the scenes of government spending and learn *who* is doing it, and *why;* and last—but by no means least among current expressions of this new and spreading awareness—the tidal-wave of queries as to *why anyone* is seriously urging *in this country* the Bismarck-to-Beveridge-to-Wagner proposal to make the practice of medicine a function of the Federal government, unless that it is part of a serious purpose to establish here the same kind of national socialism the war is being fought to exterminate in Europe. Surely, these expressions, and the innumerable others of the same kind, being increasingly heard, are harbingers of saner and healthier times ahead.

THERE is likewise a new recognition in the specific field of this comment. Its broad basis is the awakening of the country to the role industry has played in the war effort—the one *real* emergency we've had to face. The manner in which industry went to work on war production is epitomized in MR. WILSON'S question (page 34) regarding reconversion: "We can . . . . move the government machinery *out in the snow as we did our own?*" (Italics ours.) Along with the growing appreciation by the public of the spirit and the record of accomplishment thus indicated, the role of labor has emphasized and therefore publicized the human relation, with resultant increase of public interest in the worker's environment and, of course, its effect on his health. Evidences on the broad front here are numerous. Two examples may be mentioned: one, the extensive and continued newspaper publicity given the Ohio "Industrial Health Meetings" in Cleveland, Toledo, Columbus and Cincinnati last month; the other, the write-up, by way of comment or review, of Industrial Hygiene Foundation's recent survey of Health Problems of Women in Industry (page 214), during February alone, *in more than 65 newspapers,* most of them metropolitan dailies. (And for one more, see the little item on page 238.) Another example—this as to the more general appreciation of industrial health developments per se—is the leaf taken out of industry's book by the Army regarding placement of the individual in the kind of work for which he is best suited, and the reciprocal availability to industry of the Army's broader experience with intelligence testing. There is much more, overt along this line, but space limitations suggest that other examples be omitted so that a few of the signs, as it were, of an inter-professional renaissance may be noted. Probably the most significant of these signs is the up-surge of interest aroused by the Sixth (1944) Congress on Industrial Health, shown in the more-than-doubled attendance, the broad range of subjects on the program, and the keen and sustained attention given to all of them. Another is the increasing number, and better quality, of articles on industrial health subjects in the State medical journals. A third is the growing importance and wider coverage of State Department interests, as indicated by the steadily lengthening list of items concerning them in MR. BLOOMFIELD'S "Current News of Official Industrial Hy-

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[1] TURNBULL, F. M., *et al.: J.A.M.A.* 123:536, Oct. 30, 1943.
[2] TURNBULL, F. M., *et al.: Laryngoscope* 53:533, Aug. 1943.
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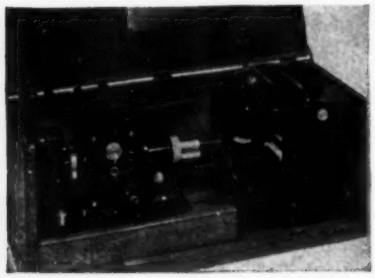
giene Activities." A fourth is the growing roster of post-graduate courses in industrial medicine, and industrial health and hygiene, in medical schools. A fifth is the evolution to the chairmanships of State Society Industrial Health Committees of men of established experience in industrial medicine, such, among others, as LONG in Pennsylvania, SLOBE in Illinois, HEIN in Ohio, and RICHARDS in Utah. And still another may be described as an enhancement of confidence and assurance on the part of the experts in industrial health, in that they are no longer pulling the punches, as it were, in talking to general practitioners. One indication of this is the utter frankness with which the responsibilities of physicians in general were discussed at the Ohio meetings above referred to. Thus, briefly, a few of the auguries as to the imminent complexion of the American Scene—generally, and in some special respects of great importance to the medical profession. On the whole they point to a more secure place in the national life not only for the kind of physical and industrial health that is based on proper living and working, but also for the kind of mental and spiritual health wherein personal integrity and intellectual honesty will be as well the rule and guide of "public duty" as of "private thinking." One need not be a soothsayer to believe these auguries auspicious.

Today, the *physician's health* is a matter of especial concern to the entire country. It is agreed that periodic physical examinations are more essential now than ever before to maintain the health of civilians. You are also aware that heart diseases continue to lead the causes of death among physicians.



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## DR. PILGRIM

IN CINCINNATI, as noted last month, I had not thought to go that way again, but did in early February for the industrial health meeting of Ohio Medical Society, where JOHNSTONE, LEGGO, HEIN, McCORD, GEIER, KEHOE and others discoursed on timely problems in the newer manner wherein there is evidence of repressions overcome, so that now is there no longer need to "pussy-foot" in talking to general practitioners outside of industry and executive personnel inside of it. And thus began a month of interesting and pleasant events, wherein the interest centered in studies of claims for injuries alleged from causes not existent, and the pleasure in meetings with a host of friends. One item of the interest was the legalistic deduction from the mere fact of munitions manufacture that a host of ills were thereby caused which had no basis whatsoever in any hazards of the same. And another the unexpected statement of an intelligent practitioner who testified in a compensation hearing that he knew nothing of the chemical composition of the materials involved, or their physiologic action. The meetings included luncheon with HOOPER, VONACHEN and HALCS, amid colloquy on dental programs, rehabilitation, and the need of reaching top management with the "Message of Medicine"; the A.A.I.P.&S. Directors' meeting, with BARTLE, HOLMBLAD, SHOUDY, SLOBE, McCORD, HAZLETT, POOLE, HAMMOND, LEGGE, SHIRLEY, CARLISLE, BELL, NEWQUIST, KRONENBERG, BLOOMFIELD, and others, where there was much spoken of the small plant, and again the matter of reaching top management; and then the Industrial Health Congress where HESSELTINE, BURNELL, ANDERSON, WISHARD, FALLS, ALLEN, LITZENBERG and SCHAUFFLER were gathered in the conference on women in industry; where COL. LANZA presided at the "States Dinner" with creditable aplomb, and SENSENICH bestowed high commendation, earned and deserved, on PETERSON and JOHNSON of A.M.A.'s Council on Industrial Health; and where there were many informal exchanges of opinion, a highlight among these being the comments of McMAHON, GAFAFER, DICK, and KUHN about the need for those encountering experiences to make reports thereof, in single cases, or preliminary in so far as experiments are concerned—these, in the way of suggestions to others, being often *multum in parvo*.

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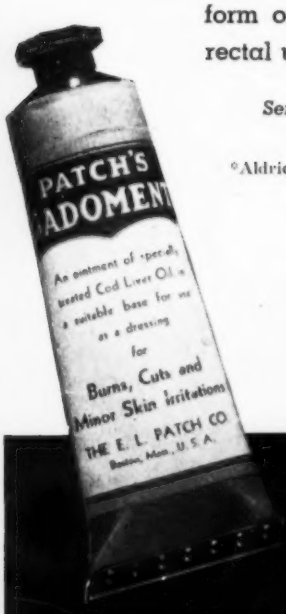

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# Hypertension

*—A Suggested Yardstick for Judging Employability—*

WAYNE L. RITTER, M.D.,
*Division of Industrial Hygiene,*
*Mississippi State Board of Health,*
*Jackson*

MANY agencies are interested in the industrial placement of those with orthopedic impairments. So much so that the term 'orthopedic impairment' and 'physically handicapped' have become almost synonomous in the minds of many people. Actually, in the practice of most industrial physicians, the chief causes for rejection or limitation of employment are not orthopedic impairments at all. Industrial rejections are most frequently based on vascular diseases, visual defects, or problems relating to hernia.[1]

Orthopedic impairments and the other "fixed" defects can almost invariably be placed in industry following a careful job analysis and placement program. But, as Kessler[2] has so ably brought out, the biggest problem of employability in industry is that relating to the group of defects that he refers to as 'dynamic'—the chronic diseases states, such as tuberculosis and syphilis and the degenerative conditions such as diabetes, most of the vascular diseases and arthritis. Same employment in these latter conditions presupposes not only careful job placement, but a continuous and automatic method of medical supervision. Without such services for employees, a plant might be well advised from the standpoint of insurance costs to reject these applicants.

However, before industrial management decides to eliminate all those with dynamic defects, they should know that almost one fourth of their applicants for employment will in some degree be so afflicted. The maintenance of an adequate labor supply may not be consistent with refusing employment to so large a group of applicants. Not only this, but an industry in a community must assume its responsibilities in that community. We must all realize by now that designating a large group of people as industrially unemployable only increases the tax burden. What then may be considered as valid criteria relating to job placement and medical supervision?

To keep such considerations within reasonable limits, we will restrict ourselves to the most common type of dynamic defect to be found among applicants for employment—hypertension. Some blood pressure elevation can be expected in 10 to 15% of people in the industrial age group.[3]

The principal reasons for considering hypertension as a cause for restriction, or even rejection, of employment are not only the fact that the outlook for a long life is not good,[4] but also the fact that these people are subject to distressing symptoms and complications which not only reduce production, but are also safety hazards. The most industrially significant symptoms are vertigo, headaches, emotional instability and mental confusion. They are also, of course, subject to two serious emergencies—cerebral accidents and acute coronary heart disease.

## Diagnosis and Prognosis

ONE of the most characteristic things about hypertension is the fluctuation of the level of the blood pressure. At the time of the first examination, tension and apprehension usually display the hypertensive at his worst. Blood pressure readings should, therefore, be repeated on applicants or employees with systolic pressures over 140 mm. Hg. or diastolic pressures over 90 mm. Hg. until the novelty has worn off.

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The height of the systolic pressure is not of itself an adequate index for determining prognosis. Systolic pressures are frequently higher in essential hypertension than in malignant hypertension.

The limits of blood pressure fluctuations are much more significant than any one reading. Those with elevated blood pressure who show marked reduction with rest and routine have the best outlook.

There is no absolute correlation between symptoms and the height or fluctuation of the blood pressure.

The outlook for women who are hypertensive is decidedly better than it is for men. The death expectancy for hypertensive men being almost twice that for women.[5]

Up to the present time, medication is only helpful in controlling symptoms; there is but suggestive evidence that such a therapeutic approach effects the ultimate outcome of the disease.

The younger the individual with hypertension, the more serious the prognosis.[6]

The hypertensive whose disease is complicated by arteriosclerosis or other forms of degenerative vascular disease, and this constitutes many of the patients, has a poorer outlook for life.

A normal blood vessel when tested outside the body in the laboratory can withstand a pressure in excess of 400 mm. of mercury.

In essential hypertension, albuminuria is frequently found, particularly in those cases associated with diabetes and decompensation. Albuminuria is usually nostic significance.

In younger employees, a modest hypertension, associated with *persistent* albuminuria should be suspected of chronic nephritis.

Electrocardiograms in hypertension: low voltage[7] or inversion[8] of the T-waves in leads I and II are discouraging prognostic indications. Of much more serious significance is gallop rhythm and pulsus alternans.

The prognosis for those with anginal pain or nocturnal dyspnea is worse when their coronary disease is complicated by hypertension.

There is little more than inferential evidence about what constitutes the beginning of hypertension. It is in just such a field as this, therefore, that physicians in industry with careful records could be of great help to the progress of medical knowledge. They are in a position to see a large enough group of borderline cases, with adequate opportunities for follow-up, so that a better demarcation point could be made and a much clearer understanding gotten of what constitutes the so-called 'pre-hypertensive state.'

### Malignant Hypertension

ESSENTIAL hypertension may shift over into the so-called malignant phase or the hypertension may be malignant from its inception.[8]

Malignant hypertension may develop in any age group under 65. It is almost never found in those beyond this age. It is most common between the ages of 35 and 50.

Malignant hypertension should be suspected in all those with a diastolic pressure over 110 mm. Hg. The diagnosis is established by finding hemorrhages and exudates on the retinal floor (necrotizing arteriolitis) papilledema and steadily diminishing kidney function.

Indeed, the loss of kidney function in any given case goes down hill with such a steady rate that it is possible to plot the maximum prognosis in such cases from periodic determinations of the maximum concentration of urine, urea clearances, or much more accurately

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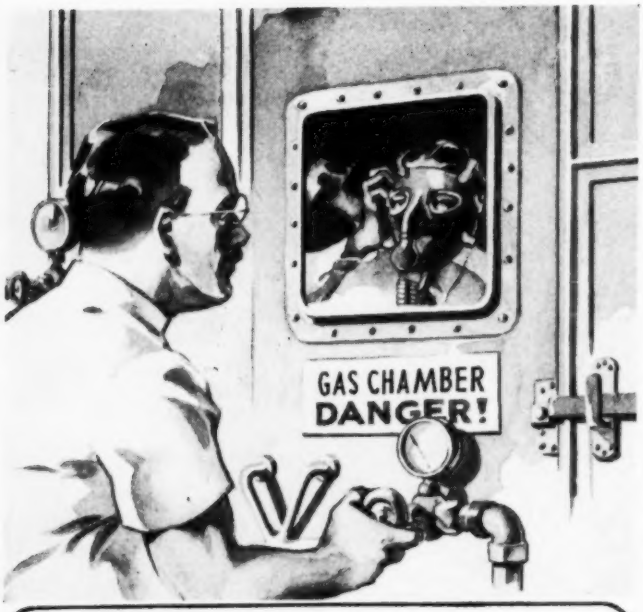


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by inulin and diodrast clearances.[9] (This ability to lay out definitely the maximum prognosis in malignant hypertension is frequently of tremendous industrial importance since the physician may then determine the amount of time available for training someone to replace a key employee.)

The average prognosis for life after the onset of malignant hypertension is approximately three years. Since in this group the onset of terminal uremia may vary from a few months up to almost nine years, it is imperative to know the *rate* of loss of kidney function.

The prognosis in such cases may, however, be even shorter due to an intervening cerebral hemorrhage or cardiac death.

### General

IT IS USUALLY wisest to keep all those with any dynamic defects requiring medical supervision on the day shift—supervision is usually closer and more effective at this time.

Hypertensives may not miss a single morning coming into the medical department in several months to get medication for relief of their headaches. This personal discomfort and industrial inefficiency may frequently be avoided by recommending the use of shock blocks under the head of the bed in which they sleep.

An excellent manual for those with high blood pressure is now available.[10] Industrial medical departments might save time and increase the equanimity of hypertensive employees by having loan-copies for use by those with discouraging recurrent symptoms.

Those who show any of the signs or symptoms of beginning insufficiencies of coronary circulation or cardiac compensation should be removed from contact with power driven machinery, given no overtime work and encouraged to change over to the sedentary types of work available.

Hypertensives should be encouraged to take frequent small feedings—never a large meal in the middle of the day.

If there is not too hard a push for production levels, the highly repetitive type of small assembly affords a fairly ideal employment for most hypertensives. Where a high production rate is set against a standard hourly wage, the hypertensive usually makes a poor adjustment to this steady and sometimes heckling drive.

Because the physical condition of the hypertensive will grow worse rather than better, it would not appear advisable to start them as apprentices on long term training programs. Other things being equal, the individual with a normal blood pressure should be given the preference in promotions to key positions. The replacement of those in key positions whose hypertension has developed complications is associated with many psychological, as well as production difficulties.

Periodic examinations of hypertensives should cover blood pressure determinations and thorough eye ground examinations. Electrocardiographic tracings, as well as maximum concentration of urine, should also be done. The employee's family physician will undoubtedly assist in securing this latter information. Where such arrangements can't be worked out, it would seem a reasonable responsibility of the company to provide such services for their own employees to assist in protecting their own as well as the worker's safety.

It is essential that no transfers be made of any employees with physical defects without first consulting the medical department.

Since many more people die as a result of vascular diseases than any other cause, it would seem of the utmost importance that sound criteria for determining

# Fact or Fiction?

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Mathematically speaking, five minus one does not equal zero. But we are speaking of industrial skin cleansers. Such a product, lacking any one of the five essential properties simply cannot do a job for you. STEPAN pH6 has all five essential properties.

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**2. EFFICIENCY...** pH6 gently yet speedily removes paint which has been on the hands as long as four hours or until it sets . . . as well as oils, greases, printing inks, solvents, salves, and many types of industrial grime which stubbornly resist even harsh alkaline soaps.

**3. SPEED...** Workers in a hurry to get home enjoy using pH6 because its action is *speedy*. For removing grime deeply embedded in the skin crevices, the chemical action of pH6 is supplemented by the mechanical "washcloth" action of pH6 Non-Abrasive Scrubber (pure cornmeal). The Stepan Chemical Co. was the first manufacturer to recognize the proved necessity of providing a mechanical scrubber for use in conjunction with a sulfated oil skin cleanser.

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**5. ECONOMY...** pH6, a sulfated oil of dermatological quality, actually costs no more per pound and no more per wash than better grade industrial powdered hand soaps. It is practical and inexpensive for plant-wide use.

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employability and medical supervision be established to meet a problem of this magnitude. Industry's failure to heed the warnings that are usually present in degenerative vascular diseases not only discredits the medical department in the eyes of the employees, but also accounts for many otherwise preventable problems.

## Summary

ESSENTIAL HYPERTENSION:

(1) BLOOD PRESSURE up to 140 systolic or 90 diastolic only occasionally. Returning to lower levels with rest and routines.

Applicant: No restriction on employment. Re-check annually.

Employee: No restriction on employment. Re-check annually.

2. BLOOD PRESSURE regularly over 150-200 systolic, under 110 diastolic.

A. *Asymptomatic*:

Applicant: Only moderate physical exertion. Re-check biannually; more frequently if symptoms develop.

Employee: Only moderate physical exertion. Re-check biennially; more frequently if symptoms develop.

B. *Acute or Recurrent Symptoms:*

Applicant: Reject unless highly skilled worker or light job. Re-check every 90 days.

Employee: Light work. No overtime. Day shift only. Re-check every 90 days.

3. BLOOD PRESSURE over 200 systolic (average).

A. *Asymptomatic:*

Applicant: Reject unless skilled worker on light job. Day shift. Re-check every 90 days.

Employee: Light work. No overtime. Day shift. Re-check every 90 days.

B. *Acute or Recurrent Symptoms:*

Applicant: Reject.

Employee: Light work. No overtime. Day shift. Re-check every 90 days.

MALIGNANT HYPERTENSION (see Diagnosis and Prognosis).

Applicant: Reject.

Employee: Remove from contact with power driven machinery. Light or sedentary work. Determine prognosis by kidney function tests. (By such a routine the employee could stay at work up to the last few weeks of his life.)

## Conclusions

THE safest and most effective method of continuing the employment of those with blood pressure elevation is through an industrial medical program that envisions automatic and frequent examinations of employees.

2. Some criteria dealing with diagnosis, together with job placement and medical supervision, have been summarized.

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*Swartz & Reilly, "Diagnosis and Treatment of Skin Diseases," p. 66.

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## For the Disabled

*—We Can Take Up Arms—*

MARGARET POPE HOVEY,
*Member, Board of Directors, National Society for Crippled Children; Member, Illinois Commission for Handicapped Children, Chicago*

YOU and I who make up the vast American public can take up arms where our disabled laid them down. Our dedication to an ideal can never match theirs in sacrifice. In purpose, however, it is conceivable that it might be possible for us to parallel the spirit that was theirs on the battlefronts of the world or in the speeded-up "home-front" production lines. The word "conceivable" is used advisedly because, unless we display a more realistic and highly developed sense of responsibility toward our war disabled than did the previous war generation, we shall have miserably failed both them and ourselves.

The statement of the problem can be made in one phrase, namely, how best these individuals can be absorbed by industry and thereby readjusted to civilian life. There will be some, of necessity, too handicapped to enter the competitive business and industrial world, but they will not be so numerous in proportion to casualties as might be thought. Rather the number of disabled who will never again be self-supporting will depend upon how many barriers both psychological and real we, the public, break down in their behalf.

This is where you and I and the rest of the civilian population, figuratively, can take up their arms. We have been presented with the chance to perform a service and carry on a campaign for those whose sacrifices have transcended self-thought and self-interest. The first thing to be done, quite obviously, is for all of us to face the facts honestly and fearlessly, even though they may be unpleasant.

Figures help in the comprehension of a problem, and in determining the degree to which it exists. Because of the indeterminate length of the war, any statistics given can be but the expert's best guess. A *conservative* estimate is that there will be 500,000 or more injured veterans after World War II who will need special assistance by industry or government, or both, if they are again to assume their rightful place in our highly industrialized and competitive society.

After World War I, 130,000 injured veterans entered courses in vocational rehabilitation training. Combat is faster and harder in this war; many more men are involved in it. Injury and illness among non-combatant service men, it is estimated, will be even greater than among combatants. The great strides which medical science has made in the last 25 years have brought the incidence of death down to a very low figure, and this means a return of many more permanently handicapped service men per capita than in the first World War. All of these factors lead one to believe that a figure of 500,000 handicapped veterans is optimistically low.

None of the already injured, nor the estimated future injury cases, will feel that society has answered its responsibility to them if doles, or institutional care, or training courses which do not lead to permanent economic adjustments are the sole response to their needs and their sacrifices. The only just and permanent answer to this problem is for society to take all of these who have something to give, regardless of their handicaps where able to produce, back into the ranks of wage earners. This means breaking down real and psychological barriers to employment, organizing training programs, offering vocational guidance, and, finally, careful placement in jobs where handicaps are minimized or become non-existent.

To accomplish as vital an objective as the breaking down of the barriers which make it difficult for handicapped peo-

The thoughts expressed herein have been written to give a quick, over-all picture of this specific program. The writer for many years has worked in the field of the handicapped. She has served as a special counselor for the placement in industry of severely handicapped workers. She also has been directly concerned with employer's interests, as well as with those of a public welfare nature where labor's point of view predominates.

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ple to find employment will take an honest and frank acceptance of what has been considered by many individuals to be an unpleasant problem. So far, in our cultural development, this problem has been faced unemotionally and practically in too few instances.

Any permanent attainment of this objective will take real cooperation between many groups—business, labor, rehabilitation authorities (public and private) and the handicapped themselves. Besides cooperation and the kind of sound thinking from which emotional and sentimental angles have been divorced completely, it will take imagination and inventiveness, particularly on the part of industry and placement groups. If the handicapped worker is to succeed he must be fitted to his job or, to put it another way, his job must be fitted to him. This means that he must not be placed where he is at a disadvantage in competitive production. Emotionalism and pity have no place in such a scheme. Acceptance of the handicapped individual must be on the same competitive level as that of the non-handicapped, or the whole structure will fall. More inventiveness and patience in trying to place him in a job where he can succeed, before discarding him, are a forward step in which industry can take further initiative.

To accomplish this, however, will mean that labor and industry must give the handicapped worker the green light. No blockings, psychological or real, must be set up against him by labor, by industry or through legislation. Those blockings which already exist should be corrected as soon as possible. This means an honest examination of hiring and placement policies on the part of business, of rulings on the part of organized labor, and of the lifting of restrictions of previous legislation on the part of society at large. The first step toward a realization of such a program should be to throw out policies, rulings, and legislation which put a premium on a handicap and, therefore, block free passage into a competitive economy. Protect a handicapped individual to the same degree that the non-handicapped are protected, through legislation, insurance, and industrial safeguards, but do not over-protect him or you will be denying him his right for free and fair competition. To deny him an even chance is to deny him that inner sense of the dignity of the individual which is only possible when he can feel that he is an integral part of the economic and social system under which he lives.

IN THE days ahead of us, with their great promise of technological development and growing social responsibility, there will surely be a place at sit-down jobs for highly skilled handicapped people who have good hands and eyes. In such instances an impairment as to leg or legs is no vocational handicap so long as the worker can transport himself to and from work. These workers will free others for jobs where legs are a necessity, just as they are doing now in our manpower shortage. The ultimate answer to whether these people should be hired or not hired is "do they maintain production standards" and not "do they wear braces or use crutches." The same factors pertain to other types of handicaps. Parking facilities, elimination of slippery floors and steps, wider aisles, machine safeguards, etc., are very minor problems for industry's inventive genius to solve. The real obstacles are certain standards in pre-employment physical examinations, workmen's compensation laws (insurance rates are not a serious problem), certain policies of organized labor, emotionalism, lack of knowledge of what the handicapped successfully can do on jobs, and lack of open-mindedness on the part of the employer.

None of these blockings is insurmountable. As a matter of fact, they would probably collapse of their own weight if two things were made possible. The first, to a certain extent, has been brought about by the present labor shortage, namely, that the handicapped person be given an even chance with the non-handicapped to prove or disprove his usefulness in competitive industry. The second is that people placing the handicapped in industry be better informed, larger in number, and work more closely with industrial situations if they are functioning out of public or private employment offices instead of on the ground. These are more important factors than might appear on the surface.

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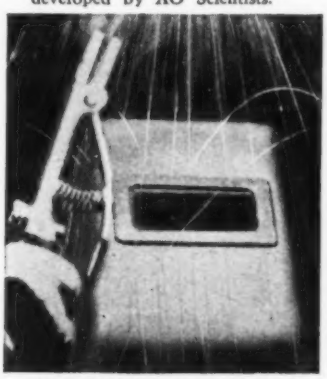

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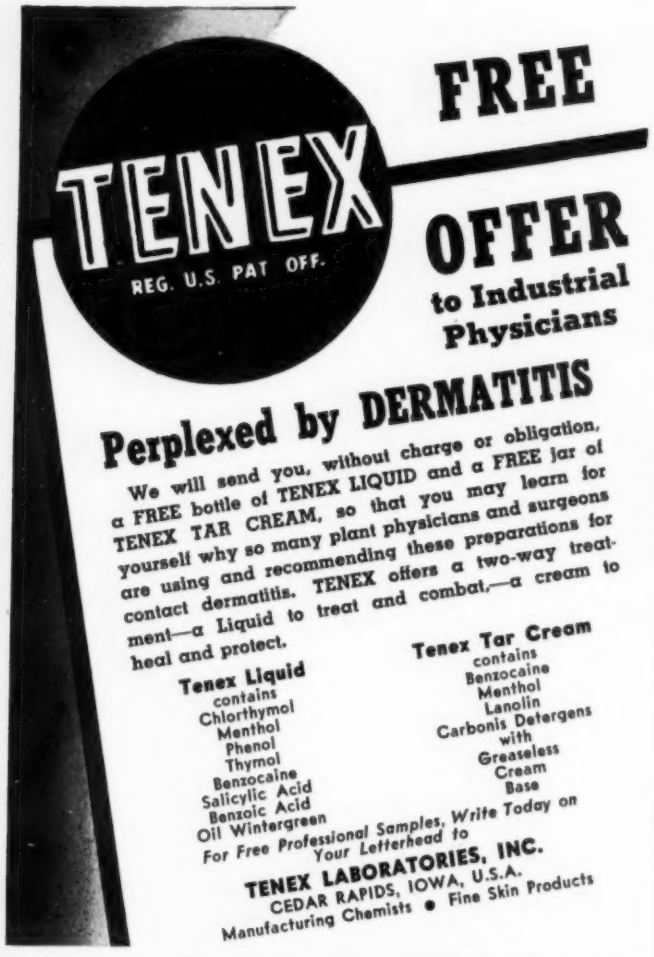
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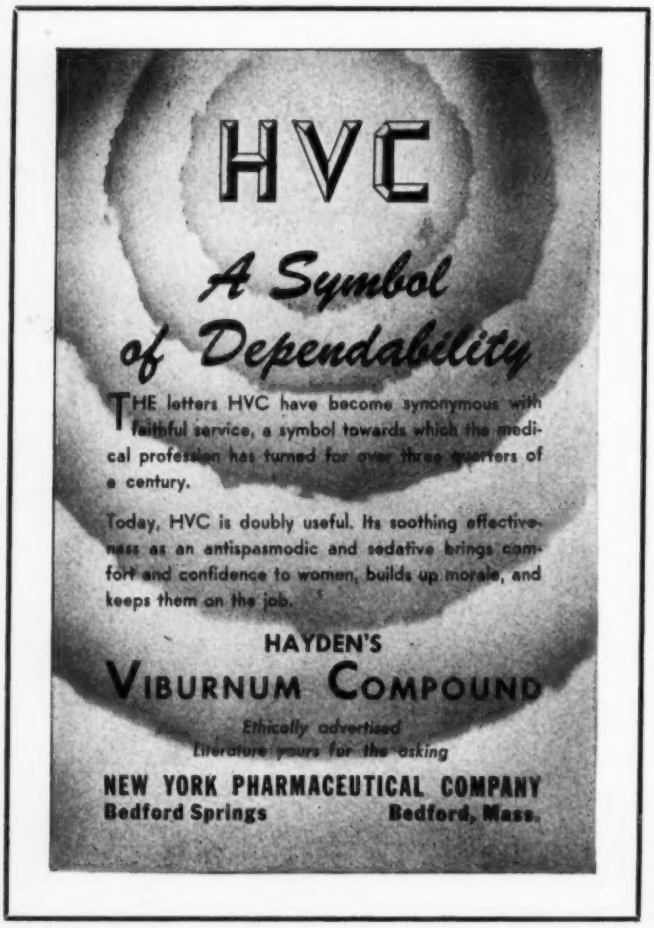
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The handicapped group are no better and no worse than the non-handicapped. They have the same broad range of skills, aptitudes, and interests as have any other group, and the same human faults and shortcomings. But, like any minority group, they are apt to be thought of in relation to the performance of any single individual and then, according to this individual's performance, lumped as a whole. For example, if an employer gets an efficient, well-balanced handicapped person, and if he is placed where his handicap doesn't militate against him, the employer is apt to ask for 10 or 100 more handicapped persons. If he gets one not so good, or if the handicapped person is wrongly placed, then he is apt to feel and say that handicapped people (as a group) will not do.

Because of this human weakness, this thinking about the handicapped in mass instead of in individual terms, special knowledge and often real inventiveness are needed in making fair and satisfactory placements. The employer should have available much information on the successful use of the handicapped in various job situations, and, if and when he needs and calls for it, the help of specialists in this field who, also, are cognizant of business and industrial methods and problems. Handicaps actually can be assets on jobs, not only because those having them shop around for jobs less, are more loyal, miss less time at work, and are less prone to accidents, but actually *because of* the defect. Take, for instance, the handicapped one-armed man who was sent out to run an elevator. The employer, in this case, had had a serious accident in his plant because the previous two-armed elevator operator had started the car before the door was closed. The one-armed operator who took over the job could not do this no matter how inattentive he might become, and the employer actually gained by another individual's defect.

Not all placements can be thus ingenious. But the further we go with our studies and with their formulation for the help of large numbers of employers, the more expert placement will become. And just that much sooner will the great potentialities of the handicapped be realized. This is no new theory. Employers are already cognizant of the added efficiency in their plants when their non-handicapped workers are utilized for their highest skills. With the handicapped *careful* utilization is an even more important factor than with other groups.

It is going to take teamwork and a highly developed sense of real sportsmanship to give the handicapped their innings. With cooperation, training and coaching, an All-American winning team can be developed among the handicapped which will be able to hold its own *competitively* along with any other. None of us ever develops all his potentialities. It therefore follows that if industry ignores the sometimes hidden abilities of this large group our entire industrial structure and social organization will lose a reservoir of energy and skill. With the handicapped we have a tremendous untapped source of unutilized, or only recently—in the manpower shortage—partially utilized, potentialities.

AMERICAN methods" have been the largest single factor in winning the war on the production front, because of both psychological and material processes. We in America do not shirk responsibility, we like fair play, we work towards an ever greater efficiency, make use of unusual ability wherever it is found, and aim for a better life for all. The forces behind our accomplishments have been due to the voluntary spirit and the freedom of action of our millions of workers, as well as to our technological gains and our production methods. Until the manpower shortage forced us to, however, we gave very little attention to the reserve energy and productive forces of any of our minority groups.

In the new world ahead we will have to play an important role in rebuilding forces which have been destroyed. Here we are going to need the help of all groups. The war has taught us many things and, perhaps, among the greatest of these is not only the scientific and mechanical gains (tremendous as those have been) but also the use and employment of the skills and ideas which individual workers have contributed. In other words, our realization of the

# NOT MERELY AN *Antipruritic*

In the treatment and control of industrial dermatoses (dermatergoses) Tarbonis* has proved of outstanding value. The list of widely diversified industries in which it is routinely employed, not only therapeutically but prophylactically as well, indicates that it is effective almost regardless of the irritant encountered.

Tarbonis is a tar preparation, presenting a special liquor carbonis detergens (5%), extracted from carefully selected tars by a process distinctly its own, with lanolin and menthol in a vanishing-type cream. It is odorless, greaseless, non-staining, non-soiling; since it is a vanishing-type cream, its application does not interfere with the work in hand, even if applied to the palms. It is highly antipruritic, decongestant, anti-inflammatory, promotes dermic lymph circulation and resorption of infiltrates.

Prophylactically—for departments where exposure to irritants is constant—Tarbonis, under systematic application before starting work, at the rest periods, and each time the exposed skin surfaces are washed during the work day, apparently interferes with the development of the initial stage of the reaction to the irritant. According to Macleod,† the "first objective evidence of irritation to the skin is dilation of the blood vessels of the papillary and subpapillary layers, with slowing of the blood current and exudation of the leukocytes and plasma." These are exactly the conditions counteracted by Tarbonis.

Tarbonis is available for industrial dispensaries through accredited supply houses. To provide a simplified and sanitary method of dispensing and to conserve the time of the Medical Director or his aids in the industrial dispensary, one-ounce jars (filled) can be obtained by industrial purchasers of the one-pound and six-pound containers.

• • •

Physicians or their industrial nurses are invited to send for clinical test sample and complimentary copy of the new, comprehensive brochure on tar therapy, and information on a simple dispensing system of demonstrated value.

THE TARBONIS COMPANY, 1220 Huron Road, Cleveland 15, Ohio.

*Reg. U. S. Pat. Off.

†The Dermatergoses or Occupational Affections of the Skin, White, R. Prosser, 4th Ed., p. 22, H. K. Lewis & Co., Ltd., London 1934.

**TARBONIS.**

***All the therapeutic value of tar in an odorless, greaseless, non-staining, non-soiling, vanishing-type cream.***

# COMPLETE PROGRAM TO COMBAT CUTTING OIL DERMATITIS

**DOLGE** offers an armamentarium for a complete hygienic program to combat cutting oil dermatitis. The emphasis is on (1) personal cleanliness; (2) prevention of contact of chemical irritants and the skin.

To remove shop grime, Dolge manufactures the prophylactic cleaner **Handeez** which contains a gentle emulsifier, plus a sterilized vegetable emollient material which acts as an absorbent. **Handeez** does its work thoroughly, yet gently—does not scratch the skin—does not provide portals of entry for pathogens.

To prevent contact with chemical irritants in the oils, Dolge supplies **Provento** protective creams in types suitable for those who work with non-soluble oils, and those who work with coolants.

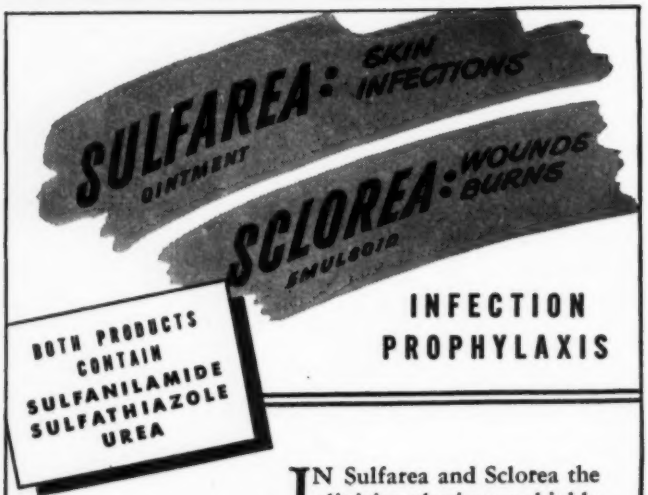
Dolge also supplies protective clothing under the brand name of **Dolcogards:** oil-resistant sleeves and aprons.

The Dolge laboratories will examine the cutting preparations used in your plant, and submit recommendations accordingly. There is no charge for this preliminary service.

## THE C. B. DOLGE COMPANY

**Westport • • • • Connecticut**






IN Sulfarea and Sclorea the clinician obtains two highly efficient methods of applying the sulfonamides.

Sulfarea, the ointment, is a ready-prepared surgical dressing for superficial lesions, infected burns, certain pyogenic skin infections, traumatic wounds, leg ulcers and the like.

Sclorea, the emulsoid, has the same indications with the exception of cutaneous infections, in which Sulfarea is more practical. However, as Sclorea also contains cod liver oil it may obtain quicker healing of burns, denudations and abrasions. Write for professional brochure, Dept. 4.

THE DRUG PRODUCTS CO., INC.
LONG ISLAND CITY, N. Y.


importance of manpower, and of its fullest and wisest use, has been a tremendous national gain.

How much better it would be to employ, *voluntarily*, in our industrial scheme, handicapped people and other specialized groups, than to wait to have social pressure force their use upon us through the process of governmental regulation as has been the case in Germany in regard to utilization of seriously handicapped veterans. Or, what would be much less humane, and at the same time less economically sound, to have to pay through the medium of taxation for the maintenance of these people. Since people must eat to live, one or the other of these courses certainly will be followed. Of that we can be sure!

A democratic system of government rests upon the foundation of social responsibility and of recognition of individual abilities, along with their fullest utilization. However, in the past this has not been applied as widely as it might have been. It would seem that our next advance might be that of accepting and applying these basic principles in a more inclusive way. Where there are gaps to be filled today, government will step in. This has been so in the field of vocational rehabilitation and in hospitalization plans for the masses. In areas where society fails in the acceptance of its social responsibilities, governmental regulation and direct assistance will be and are demanded by the pressure of a majority of voters, and eventually are gained. The course of this trend is toward greater and greater centralization of power in government. We have only to look at the LaFollette-Barden bill or the Wagner-Dingell bill, now up before Congress, to have this point brought home.

There is little reason why the problem of the returned veteran who is handicapped, or your present wage earner who is injured on the production front, cannot be solved largely by voluntary means, and thereby at little cost to government (except for physical rehabilitation and vocational training which already have been provided for). We all know what happened to individual initiative through public relief and subsidized work. May we hope that it will not be made imperative to repeat this type of program on as large a scale. If there is clear and responsible thinking, and good teamwork, the minimum of government regulation will be found to be necessary in the future.

This is especially true with the war disabled who have great social pressure behind their cause. If industry and labor do not accept the handicapped of this war within their ranks the only other answer to the solution of this social responsibility, as we have seen, will be their maintenance at heavy public expense. At its best, this is not the correct answer. Industry would be losing, we also have observed, not only through further governmental regulations and higher taxation, but also by ignoring the handicapped individuals' great potentialities for *its* further development. Two concrete examples of this point might be cited: the Peoria Plan and the Ford Plan. Further information on these may be obtained on request.

It would seem that the direct acceptance by industry and labor of the responsibility of helping to solve the problem of the handicapped person, and to return him to a life of economic independence, involves not only the difference in cost between maintaining an individual at $1,000 a year at public expense or having him produce on an average of $2,000 a year and of using and gaining through this use the benefits of his creative potentialities, but, on the contrary, that the roots of this acceptance or lack of acceptance go much deeper, and strike at the very heart of our future structure of society.

It is these moral issues which are the barometer of a nation's vitality and the acceptance of these moral issues which determine the political and social structures of countries. A nation is as strong as all the individuals of which it is composed. Offer all individuals free development and a chance to produce and *your nation will be strengthened proportionately.*

Those of us who believe in democracy and give lip service to it will be called upon, in our rapidly changing economic and social framework, to take upon our shoulders a fuller and broader acceptance of social responsibilities. Where we do not, government will. And rightly! It would be only through our own lack of foresightedness and our

*Partial to Complete*

# RELIEF

from symptoms of

## *Acute Rhinitis, Allergic Rhinitis, Allergic Asthma, Sinusitis*

# IN ONE DAY

### *Report of Large New York City Clinic*

DATA—51 patients were treated, 15 with acute rhinitis, 16 with allergic rhinitis, 10 with asthma, 10 with sinusitis. Two Nakamo Bell tablets were given each hour four to twelve times the first day according to condition and response. No toxic manifestations were noted.

*Percentage of Partial to Complete Relief Obtained by Entire Group.*

| | | | |
|---|---|---|---|
| Rhinorrhea | 70% | Sneezing | 72% |
| Nasal blockage | 55% | Cough | 29% |
| Edema of nasal mucosa | 13% | Lacrimation | 56% |
| Hyperemia of nasal mucosa | 10% | Wheezing | 21% |
| | | Sore throat | 35% |
| Headache | 47% | Pain in sinus area | 25% |
| Malaise | 63% | | |

NAKAMO BELL is a simple 6 gr. tablet of NaCl, $NH_4Cl$, KCl—nothing else.

**SEND FOR SAMPLE**

HOLLINGS-SMITH CO. IM 3-44
Orangeburg, N. Y.

Sample Nakamo Bell, please.

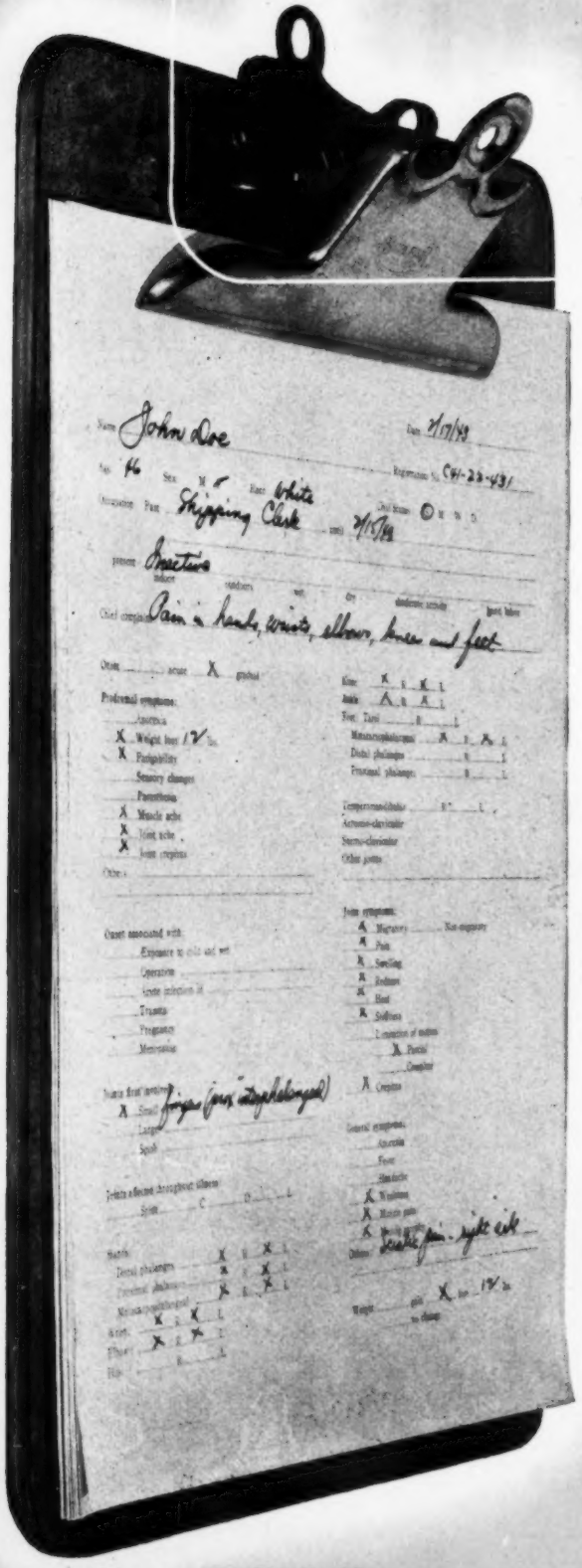
Name_____ M.D.

Address_____

# *Clinical Response*

## ESTABLISHES SAFE ANTIARTHRITIC EFFECT OF

# ERTRON*




Because it is not possible to produce chronic arthritis in experimental animals comparable to that in man, the value of any antiarthritic can be determined only by studying the clinical response of patients having chronic arthritis.

The therapeutic value of ERTRON in the treatment of chronic arthritis has been determined by carefully controlled clinical investigations in large accredited hospitals, university clinics and in private practice.

*Reg. U. S. Pat. Off.

All the published reports of this research emphasize the efficacy and safety of ERTRON in the treatment of arthritis. The results obtained apply only to ERTRON—the product employed in the clinical studies.

# ERTRONIZE THE ARTHRITIC

*Ertronize Means:* Employ ERTRON in adequate dosage over a sufficiently long period to produce beneficial results. Gradually increase the dosage to the toleration level. Maintain this dosage until maximum improvement occurs.

ERTRON alone—and no other product—contains electrically activated, vaporized ergosterol (Whittier Process).

ERTRON is made only in the distinctive two-color gelatin capsule.

Supplied in bottles of 100 and 50 capsules.

Also new 500 capsule bottle.

**ETHICALLY PROMOTED**

## ERTRON

## PARENTERAL

**For the physician who wishes to reinforce the routine oral administration of ERTRON by parenteral injections, ERTRON *Parenteral* is now available in packages of six 1cc. ampules. Each ampule contains 500,000 U.S.P. units of electrically activated, vaporized ergosterol (Whittier Process).**

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# COMBINATION BANDAGE
## FOR PRESSURE AND DECONGESTION
## "CONTURA"+"PLASTO"

**Indications:**

Eczema of Leg
Ulcerations of Leg
Sprained Ankles
Other Sprains
Foot Ailments
Varicosities
Inflamed Joints (Arthritis)
Bursitis
Phlebitis

*Literature Upon Request*

**D. C. McLINTOCK CO.**
"Medical Fabrics"
**104 Verona Avenue** **Newark 4, New Jersey**
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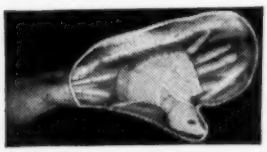
# DERMA-TECTORS

S. 4005. Mitt without Thumb.
Price each.....$.35
Per dozen.....$3.50



S. 4003. Mitt with Thumb. Size sufficient for any hand, even though covered with a thick bandage.
Price each.....$.50
Per dozen.....$5.00

S. 4006. Boot to cover ankle and foot when covered with a bandage.
Price each....$1.00
Per dozen....$10.00

Derma-Tectors come in semi-transparent or white opaque "Stelizite."

Elastic or string closing.

S. 4002. 9x12 inches. Sufficient flair to go over elbow, upper or lower arm or leg.
Price each $.50 Per dozen $5.00
Per gross $54.00

The use of DERMA-TECTORS is recommended when treating hands, arms, legs or feet with wet dressings or staining ointments. In defense plants they protect workers from oil, abrasives and metal splinters.

A FREE SAMPLE WILL BE MAILED UPON REQUEST

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selfishness that our right to a free and democratic way of life might conceivably be forfeited.

Any new system which may be erected through gradated parliamentary procedures as an answer to popular demand will be one which has recognized these responsibilities. It would not be the same one for which we are today spilling the blood of our youth, and it would not be democratic. Surely this is not the future of America. We must rise to our responsibilities in order that we may build an ever freer and an ever expanding nation; a nation which utilizes the potentialities of all its groups, and which accepts its obligations to the many.

## Rhode Island Society

*—Industrial Physicians and Surgeons—*

THE January meeting was held on the eighteenth, at the Rhode Island Medical Library. The feature of the evening was a round-table discussion of industrial medical and nursing practice. The President, Dr. Farrell, opened the meeting with the statement that a new Society, such as this one, should establish a basic code of medical and nursing practice for industry in its area; that while the members were fully aware of the principles laid down by the A.M.A. Council on Industrial Health, it might be necessary to modify them slightly in practice, bend the rules here and there to meet peculiar needs, but to do so with the full approval of the doctors and nurses so that the principles would be adhered to as religiously as possible under existing conditions.

DR. STANLEY SPRAGUE, medical director of J. & P. Coates (Rhode Island) Inc., started the discussion with a paper on "What Constitutes Industrial Medical Practice."

DR. JAMES P. DEERY, chief, Division of Industrial Hygiene, Rhode Island State Department of Health, followed with a description of the activities of his Department.

MISS HELENA I. MAHONEY, industrial nurse at Gorham Mfg. Company, discussed the activities of the nurse in the plant and reviewed the procedures accepted as ethical.

MISS IRENE MOUNTAIN, industrial nurse for Atlantic Mills, A. D. Juilliard Co., Providence, continued the discourse on industrial nursing and stressed various features of the industrial nurses' program.

The President then summarized the remarks and asked for questions. A great many written questions had been previously handed in; in fact, so many that it was necessary to devote a considerable time to discussing those alone. The questions were read and each member of the panel most interested, or best suited to answer it, was called upon; and the audience participated actively in the general discussion regarding the various fields of activity of the doctor and nurse.

We were fortunate in having with us two representatives of industry who are not physicians, and yet are honorary members of our Society, to give the business man's point of view on some of the rather controversial issues that arose. It was possible in this manner to clear up a slight misunderstanding of aims and purposes particularly exemplified by a discussion involving the use of the physician in industry as an instrument of maintaining production. Those who left the meeting did so with a clearer understanding of what the Society, in general, wants to accomplish in the practice of industrial medicine, and where the line should be drawn between that practice and the medical care of the industrial worker.

The Rhode Island Society of Industrial Physicians and Surgeons aims to maintain the principle that the injuries and illnesses incident to employment are within the realm of industrial medicine but that injuries and illnesses independent of industry, though occurring to the industrial worker, are within the province of the family physician. However, because of the peculiar location of some of our plants, the scarcity of doctors, and the changed working conditions of the present day, it may be necessary (as agreed) to modify somewhat the strict interpretation of this limitation, bearing in mind, however, that no such liberalization should evolve any attempt at social medicine regardless of the end—that the end must not justify the means.

*For allergies commonly encountered in industrial medicine*

Histaminase has been found highly serviceable in the management of a variety of allergic conditions. Published reports attest to its value in allergies due to such physical agents as cold, heat and light, as well as in skin disorders characterized by urticaria and angioneurotic edema, and in certain drug reactions. Some cases of hypersensitivity to foods have also been benefited.

Torantil is an active, stable preparation containing histaminase which is biologically standardized in histamine-detoxifying units. Usually, tolerance to this therapeutic agent is excellent.

Supplied in enteric coated tablets of 10 units, bottles of 100 and 500 tablets

**TORANTIL**

Trademark Reg. U. S. Pat. Off. & Canada

DESICCATED KIDNEY CONTAINING HISTAMINASE

WINTHROP CHEMICAL COMPANY, INC.

*Pharmaceuticals of merit for the physician*

NEW YORK 13, N. Y. WINDSOR, ONT.

# SYMPTOMATIC RELIEF

During the next few months, there will be an increase in affections of the Respiratory Tract.

| | | |
|---|---|---|
| *Chest Colds* | *Tonsilitis* | *Tracheitis* |
| *Bronchitis* | *Pneumonia* | *Pleurisy* |

Many clinicians have recognized the value of externally applied moist heat in relieving the troublesome symptoms so often present in these conditions.

| | |
|---|---|
| *Cough* | *Retrosternal Tightness* |
| *Muscular and Pleuritic Pain* | *Soreness of the Chest* |

ANTIPHLOGISTINE as a medicated poultice offers a convenient, easy to apply method of getting moist heat to the affected area. It may be used with Chemo-therapy or other special medications.

ANTIPHLOGISTINE, due to its formula, maintains moist heat for many hours.

# Antiphlogistine

*Formula: Chemically pure Glycerine 45.000%, Iodine 0.01%, Boric Acid 0.1%, Salicylic Acid 0.02%, Oil of Wintergreen 0.002%, Oil of Peppermint 0.002%, Oil of Eucalyptus 0.002%, Kaolin Dehydrated 54.864%.*

**The Denver Chemical Mfg. Co., New York 13, N. Y**


## American Association Board of Directors

THE MIDWINTER meeting of the Board of Directors of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS was held at a dinner session at the Swedish Club, Chicago, February 13, 1944, with a countrywide and representative attendance. The following members, representatives and guests were present:

Board of Directors—DR. HARVEY BARTLE, Philadelphia, President; DR. LOYAL A. SHOUDY, Bethlehem, Pennsylvania; DR. T. LYLE HAZLETT, Pittsburgh; DR. FRED W. SLOBE, Chicago; DR. CAREY P. McCORD, Detroit; DR. M. N. NEWQUIST, New York City; DR. E. P. HELLER, Kansas City, Missouri; DR. F. E. POOLE, Glendale, California; DR. H. A. VONACHEN, Peoria, Illinois; DR. H. S. BROWN, Detroit; DR. RICHARD P. BELL, Cleveland, Ohio; DR. THEODORE L. STORY, Southbridge, Massachusetts; and DR. EDWARD C. HOLMBLAD, Chicago.

The component society representatives were: from the CENTRAL STATES SOCIETY—DR. FRANK P. HAMMOND; DR. C. O. SAPPINGTON; and DR. M. H. KRONENBERG, all of Chicago; and DR. RAYMOND C. SUNDERMAN, and DR. RUDOLPH KURZ, both of St. Louis; from the WESTERN ASSOCIATION—DR. ROBERT T. LEGGE, Berkeley, California; from the NEW ENGLAND CONFERENCE—DR. J. NEWTON SHIRLEY, and DR. J. ALLAN THOMPSON, both of Boston, Massachusetts; from the ASSOCIATION FOR ADVANCEMENT—DR. JULIUS BRANDWEIN, New York City; from the NEW JERSEY ASSOCIATION—DR. J. M. CARLISLE, Rahway; and from the MICHIGAN ASSOCIATION—DR. E. A. IRVIN; DR. D. R. BRASIE; DR. LEON E. SEVEY; DR. FRANK T. McCORMICK; and DR. A. L. BROOKS, all of Detroit.

The guests included J. J. BLOOMFIELD, National Conference of Governmental Industrial Hygienists; MISS PAULINE KUEHLER, R.N., American Association of Industrial Nurses; and STEPHEN G. HALOS, Director of Convention Exhibits.

The committee reports included those on Certification, by DR. FREDERICK W. SLOBE; Component Societies, by DR. FRANK T. McCORMICK; Finance, by DR. T. LYLE HAZLETT; History, by DR. LOYAL A. SHOUDY; Medical Education, by DR. MILTON H. KRONENBERG; Membership, by DR. FRANK C. HAMMOND; Nutrition, by DR. F. E. POOLE; and Psychiatry, by DR. E. A. IRVIN. The regional representatives also gave reports of component society activities in detail. And the Program Committee held an interesting discussion, formulating a tentative program for the St. Louis meeting, May 8-12.

## Second "War Conference"

DR. SHOUDY'S Program Committee has tentatively arranged the following for the 29th Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS and SURGEONS at St. Louis, May 10-12:

Wednesday, May 10: in the morning, a Medical Clinic at Desloge Hospital, by the faculty of St. Louis University School of Medicine; in the afternoon, "Extended Medical and Hospital Service in Industry"—DRS. C. D. SELBY, SIDNEY GARFIELD, D. A. IRWIN and R. T. JOHNSTONE, and "Re-employment and Rehabilitation"—COL. JOHN N. ANDREWS and DRS. R. P. BELL, H. A. VONACHEN, and CHARLES-FRANCIS LONG.

Thursday, May 11: in the morning, a Surgical Clinic at Barnes Hospital, by DR. EVARTS A. GRAHAM and Staff,

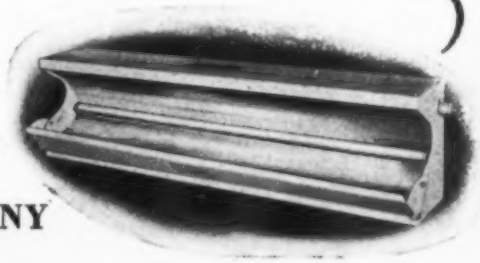
Outstanding for their efficiency and economy ratings . . . for their safety, compactness and simplicity of operation, Hygeaire Units are potent destroyers of air-borne infectious bacteria and viruses. Radiant ultraviolet germ-killing energy at its best.

Investigators have shown that expelled droplets from coughing and sneezing evaporate quickly and the droplet nuclei . . . the infectious bacteria . . . are rapidly conveyed by natural currents from room to room, from floor to floor, as living particles of dust. Destruction of such air-borne organisms is rapidly accomplished by Hygeaire germicidal energy.

Ultraviolet germicidal protection is doing a full time job in many industrial plants on the production front. It has been found an effective means of reducing absenteeism due to cross-infection and epidemic spread.

**INVESTIGATE HOW HYGEAIRE PROTECTION CAN HELP TO MAINTAIN PRODUCTION SCHEDULES**

Your medical director may consult his preferred dealer or write us direct.



**AMERICAN STERILIZER COMPANY**
Erie, Pennsylvania

# DON'T LET MINOR INJURIES BECOME MAJOR PRODUCTION PROBLEMS

NEW-SKIN is also recommended in the control and treatment of poison ivy dermatitis... as a protection against blisters, calluses, cast irritation, post-operative area infection.

*This new size bottle exclusively for professional and industrial use.*

***Treat them quickly with NEW-SKIN ...reduce time losses from accidents***

When minor injuries are treated promptly with NEW-SKIN Antiseptic Covering, loss of time is reduced to a minimum. NEW-SKIN protects cuts, burns, abrasions from dirt and dust, lessens danger of infections.

NEW-SKIN diffuses evenly, smoothly and "gives" with muscular flexation, without impairing its function.

The superiority and utility of NEW-SKIN Antiseptic Covering in protecting against contamination recommends its use in clinic, office and home.

For greater convenience and economy NEW-SKIN is now available in a new, larger . . . 8 ounce . . . bottle for professional and industrial use.

**NEWSKIN COMPANY**
**882 Third Avenue Brooklyn, N. Y.**

# NEW-SKIN

**8 oz. 75¢**

*Other New-Skin sizes at all drug stores—1 dram, 15¢ —½ oz. 30¢—1½ oz. 50¢.*


Washington University School of Medicine; in the afternoon, "Welding: (a) Clinical Aspects"—DR. O. A. SANDER, and "Welding: (b) Control of Hazards"—PHILIP DRINKER, PH.D., together with "Noise: (a) Medical Phases"—DR. DAVID A. MCCOY, and "Noise: (b) Prevention" —MR. WILSON or MR. MURRAY.

The annual dinner will be held Thursday evening.

Friday, May 12, in the morning, the subjects will be: (1) The Industrial Physicians' Opportunity to Advance Medical Knowledge"—DR. FRED J. WAMPLER; discussion, DR. CHRISTOPHER LEGGO; (2) "Better Health in Small Plants"—DR. FRANK T. MCCORMACK; and (3) "Maladjustment-Job Environment" —DR. FRANK F. TALLMAN and DR. OTTO P. GEIER.

During Friday morning there will be also two panel discussions. One will have the subject "Who Can Work?" and the panels will include DRS. J. J. WITTMER, J. M. CARLISLE and F. E. POOLE, with special attention to the problems of eyes, heart and chest, together with mental conditions. The second panel discussion will cover plant problems. As to this—"Bring Your Troubles."

Friday afternoon the subject "Women in Industry" will be presented by DRS. G. H. GEHRMANN, C. O. SAPPINGTON, A. G. CRANCH, W. A. SAWYER and F. E. POOLE.

THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION is meeting on Wednesday and Thursday, May 10 and 11, on the latter date in conjunction with the A.A.I.P.&S. The subjects on its program include: control of the health hazards presented by the new synthetic rubber industry; noise; welding; radium; solvents; the toxicology of TNT; the possibilities of an excessive silica dust hazard from the extensive quartz crystal industry which has recently sprung up in many areas of the country; techniques of air sampling in specific reference to the collection of cutting oil mists and of lead fume, the latter encountered in soldering operations where the hazard is increasing with lack of adequate tin; and hazards of exposure to cadmium, which is known to be more poisonous than lead, and has begun to cause a number of cases of poisoning.

The first DONALD E. CUMMINGS Memorial Lecture is most fittingly to be presented by DR. LEROY U. GARDNER, Director of Saranac Laboratories.

*—Continued from page 3.*

THE LITERATURE studies of reports of occupational injuries attributed to volatile solvents recently published (Benzol, November, 1943; Carbon Tetrachloride, December, 1943; Petroleum Solvents and Trichlorethylene, January, 1944; and Carbon Disulphide, February, 1944) are available in reprint form. Copies may be had for the asking.


★ ★ ★ ★

***"Catching up" with defective vision prevents accidents!***

**KEYSTONE Industrial Visual Safety Tests (IVS) play an important role in America's vital war industry.**

**The employe's visual efficiency, depth perception, vertical and lateral balance, fusion, sharpness of image and color blindness are quickly and efficiently recorded. With this data, he can be assigned work for which he is visually fitted.**

***Write today for complete bulletin.***

KEYSTONE VIEW COMPANY
MEADVILLE, PENNSYLVANIA

# UNTIMELY FATIGUE...SO OFTEN A *Nutritional Problem*

In women especially, premature fatigue and lowered efficiency are often the result of poor nutritional adjustment to increased energy expenditures. Latent or mild nutritional deficiencies are exaggerated under the strain of constant work, manifesting themselves in the form of easy exhaustibility, poor recuperative powers, emotional disturbances. Prompt correction is indicated to prevent faulty work.

Ovaltine is an ideal beverage for industrial plants during morning and afternoon rest periods. This delicious food drink is a valuable aid in correcting nutritional deficiencies. It provides a rich supply of readily utilized caloric energy, thus replenishes exhausted bodily glycogen stores and hastens physical recuperation. All workers enjoy Ovaltine, and drink it with relish and benefit.

**THE WANDER COMPANY, 360 North Michigan Avenue, Chicago 1, Illinois**

*Ovaltine*

Three daily servings (1½ oz.) of New Improved Ovaltine provide:

| | Dry Ovaltine | Ovaltine with milk* | | Dry Ovaltine | Ovaltine with milk* |
|---|---|---|---|---|---|
| PROTEIN | 6.0 Gm. | 31.2 Gm. | VITAMIN A | 1500 I.U. | 2953 I.U. |
| CARBOHYDRATE | 30.0 Gm. | 62.43 Gm. | VITAMIN D | 405 I.U. | 480 I.U. |
| FAT | 2.8 Gm. | 29.34 Gm. | THIAMINE | .9 mg. | 1.296 mg. |
| CALCIUM | .25 Gm. | 1.104 Gm. | RIBOFLAVIN | .25 mg. | 1.278 mg. |
| PHOSPHORUS | .25 Gm. | .903 Gm. | NIACIN | 5.0 mg. | 6.9 mg. |
| IRON | 10.5 mg. | 11.54 mg. | COPPER | .5 mg. | .5 mg. |

*Each serving made with 8 oz. milk; based on average reported values for milk.

*An intercurrent infection... an increased metabolic rate... a pregnancy... a surgical operation... a poor appetite— may sap the B Complex reserves to the danger point.*

When either inadequate dietary intake or increased requirements produce deficiencies of the B factors in the body, replacement with ***Whole Natural*** Vitamin B Complex is imperative because:

★ B deficiencies tend to be multiple —therefore ***Whole*** B Complex is indicated.

★ Certain factors of the B Complex are obtainable only from Nature—therefore ***Natural*** B Complex is indicated.

**BEZON*** is ***Whole Natural*** Vitamin B Complex—concentrated to high potency from natural sources—no synthetic factors are added. Only ***Whole Natural*** Vitamin B Complex contains *all 22* B vitamins.

**BEZON** is the only ***Whole Natural*** Vitamin B Complex which contains one full milligram of natural thiamine, two milligrams of natural riboflavin, together with all the remaining members of the B complex, concentrated in one capsule or two tabules.

Supplied in bottles of 30 and 100 capsules; 60 and 200 tabules.

*Samples and literature available on request*

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## INDUSTRIAL HEALTH and DISEASE

### Low Back Pain

HARRY E. MOCK, M.D.,
*Chicago*

Low back pain is not always due to pathologic conditions inherent in the spine itself. There are many anatomic and constitutional factors which may be responsible for the condition. Every case should be thoroughly evaluated before concluding that alleged minor trauma is the cause of the symptoms.

The vicious circle of myositis or myofacitis, muscle imbalance, and faulty posture assumed to relieve pain, with the increased muscle imbalance that follows, must be considered and corrected in every case before one concludes that the back needs a fusion or a herniated disc operation.

A high percentage of the cases with low back pain occur in individuals of the asthenic type. These are often accompanied by sciatica. These are the patients who respond best to corrective exercises, occupational therapy, and encouragement to correct their mental attitude.

There are many constitutional diseases of an organic nature which can cause low back pain. These must be ruled out. Disease in the genito-urinary tract, the pelvic organs, the gastro-intestinal tract, and the gallbladder in addition to metastatic malignancy not infrequently manifest themselves by low back pain.

Unquestionably, there are spines which must be fused. Unquestionably, there are herniated discs which must be removed. However, before one concludes that a given patient belongs in either category, days and weeks of observation and conservative treatment should be instituted. When treatment fails to relieve, when repeated examinations fail to reveal other causes, when the psychogenic elements has been eliminated, and when the signs and symptoms definitely locate the offending pathology in the lower spine, then and only then should operation be performed. The same rules should apply before placing the patient in a plaster body cast for weeks or months or dooming him to wear a cumbersome back brace.

In the last three years, we have treated approximately 200 cases with low back pain. In only two of these was the diagnosis of a ruptured disc made—in neither instance was the diagnosis confirmed. A few of the cases required months of treatment, but the majority responded within four to six weeks and returned to work.

Condensed from *Wisconsin Med. J.*, 42:389-100, in J. B. Lippincott Company's *Digest of Treatment*, February, 1944.

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### Mental Health in Industry

LYDIA G. GIBERSON, M.D.,
*New York*

Industrial psychiatry is a phase of preventive medicine. It aims to forestall and prevent serious mental and emotional maladjustments among industrial employees. It is an attempt to bring the benefits of modern psychiatry and modern neurology to the broad mass of working Americans now excluded from these benefits. It justifies its bid for a place in American industry not only by the humane factors involved, but also by cold hard gain in efficiency, morale and profits.

There are five crucial stages of employment:

1. Novices. I wonder how many of you can recall your first experience on a new job; how scared you were, how alone you felt, how you momentarily forgot all you had learned that would fit you for that job. If executives great and small could realize how a few minutes wisely spent at this time could help the work output and the work relationship for the future, they would give it more attention. As a rule the employees are young, pliable, eager, enthusiastic and alert. What a responsibility as executives we have in guiding these young lives!

2. Five years' service. These employees have mastered much of the policy of the company, they've learned many phases of the work, they have grown to be a part of the big organization, they feel they belong. Suddenly they grow impatient of progress—promotions haven't come along as rapidly as they think they should. They are growing discontented, unhappy and slowly a spirit of unrest moves in—the fertile soil for strikes. Employers need to create the idea that every employee has a right to come to them with his problems—that, as employees, they will be heartily received, their problems heard, and an attempt made immediately to remedy any wrongs.

3. Those approaching 30. Thirty is a crucial time for a single woman. There is something about a woman's mind that revolts at reaching her thirties. Probably she is subconsciously disturbed that she is still unmarried. She is in conflict. Shall she keep on with business, make a career of it, or not? Those who plan to stay in business are apt to grow suddenly impatient of progress and dissatisfaction creeps in. Many girls continue to live at home, going to business each day, but returning at night to care for an invalid father or mother. They devote themselves entirely to their home life with no outside interest. Death plays its role sooner or later and the girl is left suddenly alone — no hobbies — no interests — perhaps no friends. Undoubtedly this girl will need help, for her work will suffer. So many of these conditions arise during the 30 to 40 period. Understanding and care are needed to adapt the individual to the job she already knows.

Men in the business world also constitute a definite problem as they approach 30. By that time they are well started on their careers. They are anxious to make good. They have families to support. They, too, grow impatient for advancement—not always facing the issue that they are not mentally and emotionally capable of doing a certain job. The desire to do the job is not always accompanied by the capacity to do it. As they fail, how many of them develop truly neurotic symptoms?

4. Menopause. Somehow the idea has been created that a woman must react differently to life during menopause. She feels she has the right to act a little queerly at this time. The

Condensed from *Clinics*, 2:719-730, in J. B. Lippincott Company's *Digest of Treatment*, February, 1944.

Cleanliness is of prime importance in the prevention of skin diseases. Indeed, some authorities state that 90% of all occupational skin diseases could be prevented by proper personal cleansing methods. It is those workers who handle chemicals and other materials which are difficult to remove at wash-up time who are the ones most subject to occupational dermatitis. The use of harsh, strongly alkaline or abrasive cleaners containing grit and sand or the habit of using solvents and bleachers by such workers in order to remove this tenacious soil is often the cause of dermatitis. West calls this "Soapotage" . . . and recommends Lan-O-Kleen as the answer.

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idea gave women an excuse for unpleasant behavior. It is amazing how easily some women get through this period by a sensible approach. If we can teach all women that menopause is a perfectly normal physiologic process (and Nature has the habit of doing a good job), that certain physical symptoms will appear and must be met in certain definite ways, then we will have done a service to womankind.

Let me assure you men have a menopause as well as women—true, not a physiologic one but an emotional one occurring from 50 to 60. Many men during this age period go through a very definite depressed cycle and, since many are in key positions, efficiency of the organization may suffer. It is well to recognize the condition early.

5. OLD EMPLOYEES. Some of these individuals have no hesitancy in airing their real or imaginary grievances of changes in the organization. They loudly exclaim, "I have given the best years of my life to this company and see what happened to me." It is difficult to change the viewpoint of those old employees, to have them see that "Time Marches On" and with it comes progress—the old order of doing things must give way to the new order. One often wonders if too much security in a job is not conducive to a slipshod manner of doing the job. In dealing with the problems of this age period, let us not let our emotions entirely govern our intellects. It is just as unhealthy to feel you can't be fired from a job as to be frightened that you may be fired any minute.

PSYCHIATRY IN WARTIME INDUSTRY. For full production to be reached and maintained, one must learn the real meaning of safety and morale. Eight of 10 accidents are preventable if the psychologic factors are controlled. Fear, worry, illness, psychologic unrest, fatigue and boredom cost many lives. Anger, irritability, bravado, perverseness and childishness all take a toll in human accidents. Undoubtedly the two basic requirements for an accident are the lack of physical coordination and, second, inattention. With their deepset emotional foundations, they constitute the sign and signature of real and potential accidents. If we are to prevent accidents and not merely mop up after them, these two factors must be detected and removed upon their first appearance.

Physiologic fatigue—from undernourishment and too long hours of work; mental fatigue arising from long periods of concentrated work; and "nervous fatigue" caused by monotony on a job, poor industrial relations in a shop, dissatisfaction and lack of adjustment to conditions, all contribute greatly to accidents. At this point, I would like to emphasize that the less of one's personality is used on a job, the greater the monotony of the job—hence, the greater liability of inattention and a subsequent accident.

Industrial morale is a vital problem that strikes deep into the motivation of our national way of life. Morale does not happen: it grows out of a personal identification with the nation's destiny. Good industrial morale is dependent upon good mental and emotional health; normal behavior cannot be expected from sick people. There are always a few mentally ill persons in every large group; a considerably larger number of people whose thinking and emotions are out of balance because of physical disease; and a great number of people whose emotions are temporarily upset.

It has well been stated, "In this time of stress and strain when the emergency calls for every ounce of effort that each one of us can exert, it is more essential than at any other time that the nervous mechanism of each one of us does not run dry. The lubrication that is needed can be compounded out of the elements of human understanding which the medical adviser and personnel director should carry in his kit. They are the ones who should see that the petty misunderstandings, the small clashes of personality, are adjusted before they have had time to interfere with the normal operations of a group of human beings, whose success depends upon their cooperation and unity of purpose. The medical adviser and the personnel director are to an industrial organization what the machine setter and maintenance men are to the mechanical equipment of a plant. Just as a single bearing out of line may shut down an entire conveying system, so can an unadjusted misunderstanding destroy the efficiency of an entire department."

WOMEN IN INDUSTRY. The wise foreman will approach this task of supervising women with tact and understanding. He will remember that (1) the skill of the woman worker, while possibly comparable to that of a male worker, is not backed up as his is by years of varied industrial experience and "know how"; (2) the physical endurance of women, comparable to and in some ways superior to that of men, exhausts itself in a different manner, renews itself more readily, and requires a different kind of working rhythm; (3) a woman has

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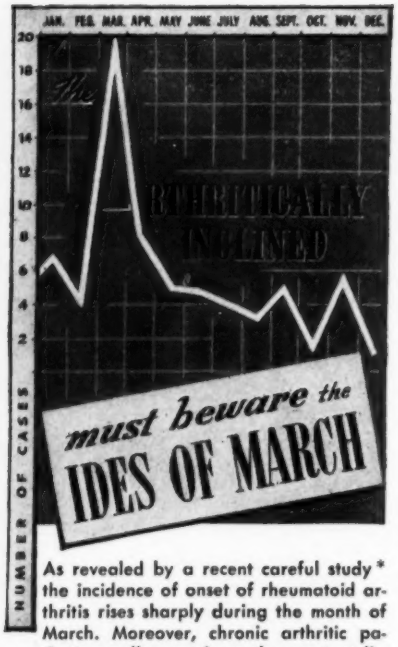


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*Dawson: in Nelson's New Loose-Leaf Med., Vol. V, p. 609.

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**Assistant Clinical Professor of Nervous Diseases, Western Reserve University School of Medicine, Cleveland, Ohio**

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a tendency to live her life wherever she happens to be. Therefore she is normally unwilling to pare herself down to one aspect the way the male worker automatically does when he enters a factory; (4) women need an induction and training period to adjust them to the industrial climate; (5) frequent rest periods increase women workers' efficiency; (6) industrially employed women need training in safety and health precautions equally as much as, if not more, than men; (7) it takes a little time for a woman in industry to realize she cannot be a competent industrial worker and a competent housewife at the same time.

## Clinics—Symposium on Industrial Health

*—October, 1943—*

*Review by*

FREDERICK W. SLOBE, M.D., F.A.C.S.

THIS 298-page number of Lippincott's "Clinics" is devoted entirely to subjects pertaining to industrial health. With DR. C. O. SAPPINGTON, as editor, and the 24 contributors, all of whom are authorities in their respective fields, the quality of this issue is self-evident.

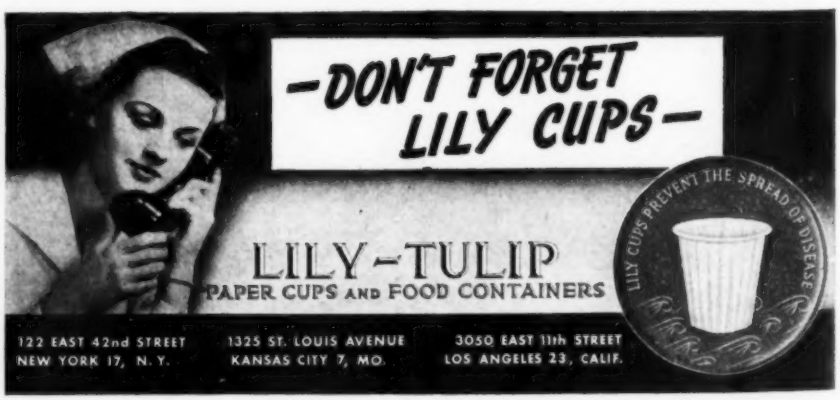
"The Industrial Physician" is discussed by DR. A. G. KAMMER to include the qualifications of the physician, the components of an industrial health program, and inter-plant relationships. An important feature of this article is a set of rules adopted in 1940 by the Committee on Industrial Relations of the Lake County, Indiana, Medical Society; these guiding principles merit general adoption.

"The Industrial Nurse" is covered by CATHERINE R. DEMPSEY, R.N. After describing the personal, academic and professional qualifications of the industrial nurse, she discusses written standing orders, records and reports, and the general duties of nurses in industry, to include not only the well-known routine but also the broader aspects of health education, nutrition, plant inspections, and other phases of industrial health. The value of the nurse as a health teacher is emphasized.

I. DENT JENKINS discusses, "Industrial Management and the Medical Department." The attitude of the industrial executives is evidenced by the care devoted to the planning of medical policies, the care exercised in selecting medical and nursing personnel, and the quarters and equipment provided for the medical department. In connection with the employment of the handicapped it is stated that "It is cold-blooded good business to provide gainful occupations for people who can perform the work involved in an efficient and satisfactory manner. The field is worthy of much more thoughtful attention from upper management than it has generally received." After a thorough discussion of the health program, physical equipment, public relations, and coordinating activities, the author concludes, "Through a soundly developed industrial medical program—large or small—management is afforded a means for evidencing its concern in the welfare and physical good of its employees in a practical and constructive manner. While altruistic motives may be attendant, results can be measured and justified by sound business standards."

The industrial hygienist's attitude is portrayed by WARREN A. COOK in his article "Industrial Hygiene and Sanitation." In addition to the primary advantage accruing from protecting the workers' health, MR. COOK emphasizes the advantages such as increased production, improvement in industrial relations, and the favorable effect on public relations. Toxic hazards and their detection, the value of laboratory analyses, and practical features in the technic of occupational disease control are emphasized. Sanitation, illumination, noise and a section on the utilization of industrial hygiene methods round out an article which is quite comprehensive.

"Industrial Safety and Industrial Health" by NED H. DEARBORN stresses the personal equation in the cause and prevention of accidents, the development of various phases in the practice of industrial medicine and surgery, and safety factors as related to impaired vision, defective hearing, defective oral hygiene, and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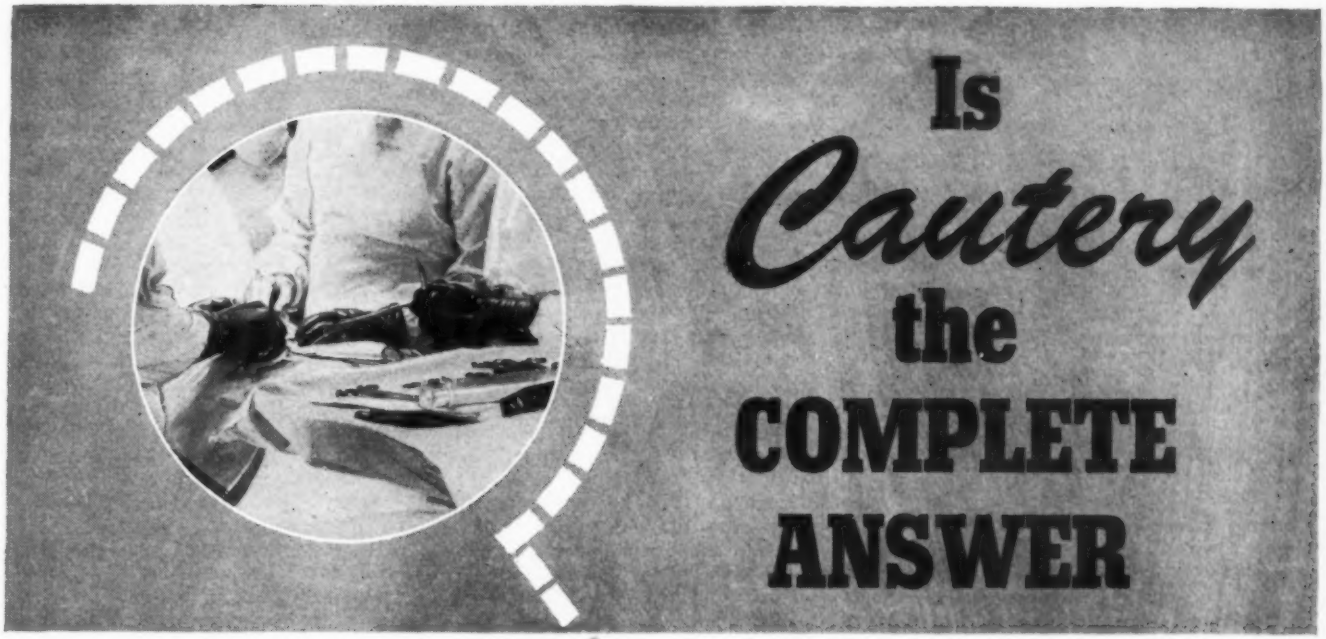


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other physical impairments. He quotes at length from DR. SAYERS' report relative to fatigue studies and from the National Association of Manufacturers' report of May, 1941, in its statistical analysis of the value of an adequate industrial health program.

DR. CAREY P. McCORD uses the name of the father of industrial medicine, "Ramazzini Medicus," in writing a letter to an imaginary corporation president in his interesting article, "The Organization and Administration of an Industrial Health Program." Relative to the question as to whom the medical department belongs, DR. McCORD states, "By and large the medical department at its best functioning is an exclusive instrument neither for management nor worker groups. It stands midway between the two, loyal to both, prejudiced in favor of neither." It is stated that in any work group from 5 to 8% of all workers have conditions which should lead to their appearance in the plant dispensary on any given day. Good industrial medicine leads to a lowered absenteeism rate, lowered insurance cost, prevention of unwarranted claims, promotion of good working conditions, and improved morale. Traps and pitfalls of the industrial physician, his legal responsibilities, and his general domain are all discussed quite informatively.

It is fitting that "The Problem of Absenteeism Among Industrial Workers" should have been assigned to DR. WM. M. GAFAFER, due to his extensive statistical studies. The responsibilities, causes of sick absenteeism, the duration of these various causes, and variations according to season, occupation, color and other broad groups are shown both by charts and graphs.

The subject of "Industrial Fatigue," likewise, is deservedly given to DR. R. R. SAYERS to discuss. DR. SAYERS, in his capacity as Director of the U. S. Bureau of Mines, has made an intensive study of this subject. One definition of fatigue is given as "Fatigue is marked by a decrease in power to work, a decrease in pleasure taken in work, and a decrease in the enjoyment of the hours spent away from work." The physiology and pathology of fatigue are discussed, and also its important psychological aspects. An interesting observation made is the fact that manifestations of fatigue are impaired quality of work, errors, and increased inaccuracy rather than in an impairment of volume of work performed. Relationship of fatigue to accidents and finally the detection and prevention of fatigue conclude the article which also contains a good bibliography.

The pertinent problems pertaining to "Women in Industry" are considered by DR. MAX R. BURNELL. Safety factors in lifting, the predisposition of women to toxic materials, the proper placement of women, the question of pelvic examination, and the tuberculosis hazard are discussed. Specific problems of female employees, such as dysmenorrhea, menopause and pregnancy, are emphasized, and definite recommendations made concerning their care. The author is in favor of a counsellor and of matron service and expresses his ideas as to hours of work, rest periods, part-time workers, safety designs in clothing and correct general working conditions.

"Clinical Aspects of the Occupational Diseases" are analyzed in a practical way by DR. RUTHERFORD T. JOHNSTONE. Lead, mercury, arsenic, manganese, cadmium, magnesium, radium and other metals are discussed followed by a section on dust diseases, solvents and welding hazards.

In the article on "The Problem of Nutrition in Industry" DR. MILTON H. KRONENBERG quotes DR. W. H. SEBRELL, "In all probability nutritional diseases constitute our greatest medical and public health problems, not from the point of view of the number of deaths, but from the point of view of disability and economic loss, a fact about which we have been misled by the very low death rate and inadequate diagnosis." Various charts are presented together with methods for meeting the various problems concerning the development of a well-balanced nutrition program. Methods of factory feeding, employer education, educational literature, food preparation, demonstration clinics, vitamins and the contents of an adequate lunchbox make up the balance of an interesting article.

DR. C. D. SELBY, in his article "The Role of Non-Occupational Sicknesses," includes some valuable protective measures against respiratory infections, control of which is so important because of the tremendous amount of absenteeism they cause. Statistics show that the high rate of absenteeism in women is due to digestive diseases as well as to pelvic conditions. Nervous disorders are similarly predominant among women —and thus he concludes that sickness absenteeism has for its chief problem special considerations as applied to women.

"A Program to Meet Industry's Eye Problems" is DR. HEDWIG S. KUHN's contribution. Beginning with a discussion of eye injuries, adequate goggle programs, and other similar subjects, DR. KUHN carefully evaluates various methods of visual testing, visual acuity as related to job analysis and job placement, and the relationship between visual skills and production.

"Dental Services in Industry," by DR. HAROLD A. HOOPER, is a subject to which more and more attention is being paid. He discusses dental defects in industry and methods of conducting a follow-up program, and feels that the present conception of industrial dental practice is inadequate. Oral sepsis is reported as being responsible for a variety of systemic conditions; systemic manifestations and their industrial relationships are listed both by statistical tables and with written descriptions. The author concludes by saying "And short of a full dental x-ray at the time of the physical examination, especially the pre-employment, with proper interpretation by a competent dentist, prevention of the dental condition potential in any satisfactory degree is absolutely impossible."

DR. LYDIA G. GIBERSON discusses "Mental Health in Industry," based on a long experience in industrial psychiatry. She comments on the five crucial stages of employment to include the novices, those employed five years, those approaching 30, the menopause, and the old employees. Psychological aspects, and the causes of accidents, the role of the foreman with special reference to the relationship of female employees, the important subject of industrial morale, and war-time aspects of psychiatric trends are discussed. DR. GIBERSON concludes the article with the feeling that, "in this war the ultimate victory must be gained through a moral, yes a spiritual determination that will not be gainsaid."

"The Medicolegal Aspects of Occupational Disease" is the subject assigned to THEODORE C. WATERS. He compares the variations of the workmen's compensation laws of different states, also the methods of handling controversial medical questions. Procedure for appeals from the decision of the state agencies and a section on the legislative provisions for the prevention of occupational diseases are included.

DR. CARL M. PETERSON discusses "Industrial Health Activities in the American Medical Association." The work of the Council on Industrial Health is well-known. DR. PETERSON stresses the objectives of industrial medical service creating a demand by educating the employee and the employer, improving medical preparation of physicians and perfecting medical organizations to aid in carrying out these ideals.

The activities of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS are described by DR. E. C. HOLMBLAD. Organized in 1915, this Association has steadily increased its scope of activities. It has active committees on Certification, Fatigue, Medical Education, Medical Records and Procedures, National Defense, Nutrition, Prevention of Blindness, Psychiatry, and Venereal Disease. The annual convention of the Association constitutes a post-graduate course in industrial medicine, and surgery and is usually held concurrently with the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION and this year also with the AMERICAN ASSOCIATION OF INDUSTRIAL NURSES.

The work of the AMERICAN ASSOCIATION OF INDUSTRIAL NURSES is described by POLLY ACTON, R.N. This association, as well as local and sectional industrial nurses' associations, has shown steady growth.

PHILIP DRINKER gives a historical summary on "The Role of the Amer-

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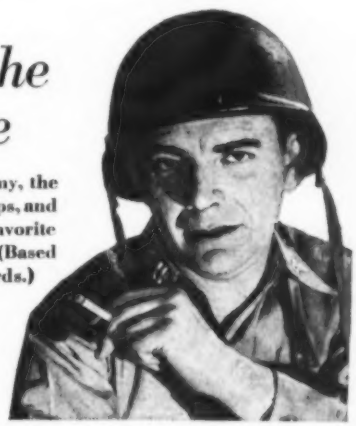

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New reprint available on cigarette research — Archives of Otolaryngology, March, 1943, pp. 404-410. Camel Cigarettes, Medical Relations Division, One Pershing Square, New York 17, N. Y.

ican Industrial Hygiene Association." This is an active organization whose influence is becoming felt more and more through its meetings, writings, and leadership displayed by its 300 specialist members.

"Industrial Health Activities of the United States Bureau of Mines" is discussed by DR. R. R. SAYERS. Some of the important work this Bureau has done includes studies on carbon monoxide in tunnels, nitrogen oxides generated in the use of explosives and exhaust gases, petrographic analyses, spectrographic studies of heavy metals, etc. A partial reading list of the publications of the Bureau of Mines is included.

To V. A. ZIMMER is assigned "Industrial Health Activities of the United States Department of Labor." Some recent interesting bulletins have been published by this department, all of which are available. One of the activities of the department is to assist states in the development of laws and regulations to control health hazards, and to educate state factory inspectors, industrial safety men, and plant supervisors.

The Industrial Health Program of the United States Public Health Service has made rapid strides in recent years and this is discussed by DR. J. G. TOWNSEND. The States Relations Section has devoted services to industrial military establishments, the training of personnel and various types of aid to state and city activities, cooperation with the War Manpower Commission and other agencies of the government concerning hours of work and the employing of handicapped workers. The promotion of industrial nursing consultation services on the part of state health departments is another activity, as well as industrial dentistry. The Research Division is constantly engaged in studying new toxic material and the work of the Dermatoses Investigating Section is well-known. It has medical, engineering, and statistical units.

"Functions of the Industrial Hygiene Foundation" by JOHN F. McMAHON lists the objectives of the Foundation which are concerned with the support and conduct of scientific investigations on medical and engineering problems in industrial health and the provision of practical services to member and nonmember companies. Many analyses of hazardous materials and conditions have been made, all of which redound to the benefits of industrial health. Plant hygiene surveys and programs to reduce sick absenteeism have been conducted also.

It is hoped that a perusal of the above brief descriptions of the 24 articles clearly indicates what the publisher, the editor, and the group of authors, have accomplished — namely, the virtual development of a textbook on the general subject of industrial health. The articles are not designed to be too highly technical and, therefore, are of definite appeal to both the industrial physician and the general practitioner who desire to obtain a reasonably accurate perspective of this important field.

## INDUSTRIAL HEALTH
### The Message of Medicine to Management

INDUSTRIAL medicine, including its associated activities (preventive medicine in industry; industrial hygiene engineering; industrial nursing, and industrial safety —all emphasizing prevention) is a relatively new special field of endeavor. Its essence of specialization is involved in the employment relationship and group activities, as contrasted with private practice. Some of the important phases are:

The hygiene of occupation;

Scientific placement;

The pre-employment and placement examinations;

Correction of physical defects through supervision and follow-up;

First aid to injury and illness at the plant dispensary;

Complete care of industrial injuries and occupational diseases;

Case-finding activities, including tuberculosis, syphilis, and other diseases of ordinary life;

Plant surveys with reference to the improvement of working conditions; and

Health education.

More than 25 years ago, when industrial medicine began to assume an important place in industrial affairs, emphasis was mostly on surgery. There has been a gradual change, until now the emphasis is principally on non-surgical activities. For example, in many well regulated industrial medical departments, conditions necessitating major operations because of injury occur rather infrequently, whereas minor surgery, minor illnesses, and other employment relationships closely connected with medical activities constitute the majority of industrial medical department functions. Moreover, there has been considerable recent emphasis on medical administration in industry, and the medicolegal aspects of industrial practice.

Although not always recognized officially as a specialty of medicine and public health, industrial medicine is now conceded to be a special form of preventive medicine and public health as applied to industry, and has become an indispensable type of service in these times.

IN THE evolution of industrial health (which is the all-inclusive term and embraces the whole field of prevention in industry with respect to prevention of injury and diseases, as well as the preservation of the health of the working population at the highest possible level) the first attempts were crude. As previously indicated, there were few preventive activities, and services largely centered around curative methods. Even with the coming of the compensation system in various states, only mechanical injuries were provided for in the earlier laws, although a few states made provision for the occurrence of occupational diseases as early as 1914-16. Even now, only some 26 states have definite legal provisions with relation to the occurrence of occupational diseases. The result has been confusion and chaos—because of untried laws, as well as complex new problems in the control of health hazards, the consequent prevention of occupational diseases, and the adjudication of occupational disease claims, together with the general lack of special knowledge concerning these problems.

Because the laws have not required nor set up special provisions with reference to the health of the industrial population; because medical schools did not teach industrial medicine, hygiene, and health in their regular courses on a general basis throughout the majority of the recognized medical schools; be-

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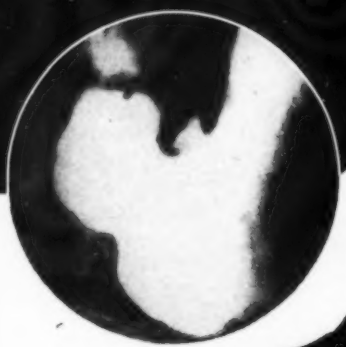

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cause industry as a whole has not insisted upon high standards of industrial medical practice; because of apparently late recognition of industrial medicine as a real force in American medicine; and because, finally, no standards or qualifications for specialization exist such as have been promulgated in other lines of medicine—for all of these reasons the general tendency in past years has been for industry to accept medical men in industrial work without any preparation for, or little experience in, the assumption of responsibility regarding medical and health services.

This condition, however, has not been without improvement; in some industries, and in certain locations, there have been well managed medical services for the last two decades, especially in the larger groups. There are, therefore, excellent examples of outstanding medical men in industrial work and of outstanding medical services, which form the pattern for other services to be developed. But the work done in small and medium-sized plants, as all students of the subject know, is generally on a much lower plane, although this is not entirely limited to health services alone, for it also is true of other types of professional service, including industrial relations, safety engineering, and the like—with, of course, some exceptions.

NOTWITHSTANDING these conditions, there are now and have have been for some time, well-defined practices and methods which are available for those who would use them, and collected experience is now sufficient and adequate to form a sound basis for present and future needs.

Too long, however, has industry accepted low grade and makeshift services, and too long has medicine countenanced such practices. These attitudes have built up bad habits (the bargain counter in industrial medicine—fee splitting—the third party fiasco—and other things well known). Although the apparent reason for such practices has been centered very largely around economic factors—in the belief that "anything would do for the industrial employee"—well regulated insurance companies, progressive industries, and capable professional men now know that the best health services, as to any kind and all types, are the cheapest in the final analysis.

How does the average industrialist choose his industrial physician? On the basis of ability and standing as an experienced man? Or because he plays bridge or golf well? Or because he seems to be socially affable? Are there ways and means of finding out the professional qualifications of an applicant for the position of industrial physician? In production problems industry would not for one moment tolerate the inefficiency and low standards that are frequently allowed to prevail in the rendering of health services, in many instances, throughout the country.

What difference does this make? It makes a lot of difference in terms of economics, which we believe, from years of experience, really interest the industrialist. The dictum of those who know and should know is this: No program of medical service in industry *begins* to pay for itself until the *prevention* of disease and injury becomes an actuality! Moreover, compensation cases can wreak havoc with the ledger, especially a few occupational disease cases; it is now commonly known that during the past 10 years certain industries have had to close their doors because of an epidemic of compensation cases and damage suits.

THERE is much talk now of reconversion, as there should be, with apparent emphasis on the reconversion of the smaller businesses. Not only applicable to small concerns, but as well to large, are the claims that may arise during the period of reconversion unemployments and dislocations. As to these, are there records to show a clean bill of health concerning present employment conditions? Are your employees receiving exit examinations as their employment is terminated or suspended so that *you* will *know* what their physical condition *is?*

COMMENTING on and checking these factors, we believe there is a real need, right now, for some constructive planning with regard to the medical administration of important policies and improvements of policies, including medical services. Here again, *prevention* is to be emphasized. And here is where certain medical organizations, particularly the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, can play a vital part. Such groups have much to offer; the physicians who have attained distinction in industrial medicine are so many in number and so well established in administrative successes as to disabuse the purely executive mind of the notion that it possesses a monopoly of executive talent. Indeed, there are numerous industrial physicians whose executive abilities are on the same high plane with their professional attainments. There is no industrial planning in which the executive as well as the professional abilities of these men cannot be used to good advantage wherever such planning involves the employment relation.

THE interest or disinterest of top management in health and medical services in industry has been a much discussed subject. Likewise the contact of top management with the industrial medical services has received a lot of consideration, particularly with reference to whether medical administrators or industrial physicians should report to the top or to some lesser authority.

We make no attempt to discuss the two sides of this matter at this time; we merely pose it here, as a question which must ultimately be decided. With the increasing emphasis on the health of the employee, however, we believe that constructively-thinking top management will find that medical administration in industry, with its consequent problems of prevention and health promotion, will be one of the phases of industrial life that not even the mostly highly placed executive can afford to neglect.

Whether you agree or disagree, do you have questions? Do you have comments? We shall be glad to receive personal comments or questions of any kind, and will, as time and space permit, discuss them.

WITH the growing spread of hospital and medical service plans, as well as some specialized plans for industrial employees, it is believed that this also is a subject which merits consideration at some length—not at this time, but later. Mere mention is made here.

BY WAY of the foregoing, we open these columns to the discussion, and, we hope, also the possibility of help toward the solution, of *management problems* in industrial health services. We invite discussion—in spite of the fact that our closing statement is one that does not admit of controversy: When management demands top-notch industrial medical advice and counsel, as well as top-notch industrial medical service, they will be forthcoming, provided only that management remembers that one gets what one pays for.